

# SyncWare News

The journal for technical  
applications of T/S  
computers

Volume 5 Number 3

Jan.-Feb. '88



## The Old Order Changeth

This is the first issue for which Basil wears the mantle. Not, fortunately, the mantle, as issue V:1 reported. (Jocelyn remarked that cleaning and pressing a mantle sounds like something out of the gymnasium.) But typographical errors, like the poor, will be with us always, and we apologize in advance for those that will inevitably slip through. Basil's letter of self-introduction appears in this issue's FORUM column.

## Intelligence About Sir Clive

Writing as Chairman of British MENSA, Sir Clive Sinclair published a very provocative article about Artificial Intelligence. He predicts an assembly of ten-to-the-fourteenth components, each in the order of a tenth of a micron in diameter, yielding an artificial brain with a capacity comparable to that of its human counterpart, in a 10-centimeter cube.

He foresees a "low unit cost", and continues: "The basic raw material, 170 grams of silicon, is not expensive, the energy input is not high, and given known redundancy techniques, production yields should be no problem. Production time should be extremely short compared with the competing biological product."

Now "all" we need is the engineering.

## Vive Le Z88!

Lawrence (Larry) Chavarie of Ottawa sends us his masterly translation of an article from the French publication "Science et Vie" (Science and Life). The review describes the Z88 as embodying technical features that stun ("etonne"), being loaded with gadgets ("l'ensemble est truffe d'astuces"), and incorporating "une memoire d'elephant".

Just as our daisy wheel doesn't handle French accents, so do speakers of French criticize the Z88 keyboard. Not only are the accents missing, but the French conventional keyboard is not QWERT..., but something starting AZERTY. The acronyms EPROM and WYSIWYG (What You See Is What You Get) are unchanged in French, though. Eh bien, plus ca change...

SWN EXCLUSIVE: PC-8300 Schematic This Issue!

# FOR YOUR SUPPORT

FRANK LOCKHART, P.O. Box 1131, Shelby, NC 28150, (704)484-8539 offers programs in Engineering and Mathematics, as well as games and utilities for QL, TS1000, and TS2068 computers. Prices are \$17.95 for QL (microdrive), \$12.95 for 2068, and \$8.95 for 1000 (cassette). Program list free for SASE.

ROBERT D. HARTUNG, 2416 No. County Line Rd., Hometown, IN 46748, (219)637-3081 reports that BetaBasic programs should now be ordered through: Beta Soft, 24 Wyche Avenue, Kings Heath, Birmingham B14 6LQ, ENGLAND. For SPECTRUM and SPECTRUM-emulating 2068s. See SWN Vol. 5 No. 1 for a description of this program. Price is about 16 pounds Sterling (one pound=\$1.80 at this writing).

Dan Elliott, Rt 1 Box 117, Cabool, MO 65689 is offering service for several different makes of home computers including the Timex-Sinclair line. Prices vary, so contact Dan to get the latest info. He is also offering to make mods to TS computers and peripherals per published articles.

LEMKE SOFTWARE, 2144 White Oak, Wichita KS 67207, has put together the Pixel Print Press, a newsletter highlighting Lemke Desktop Publishing software programs for the TS2068. Products shown include the popular Pixel Sketch & Graphics Editor, the new Pixel Print, an Icon Package, a Font Package, a Pixel Print Utility for Tasword, and Checkbook Budget Master. Send a SASE for the latest Lemke Software info.

NICOLSON NIGHTTIME NETWORK is a free BBS with a Timex sort-of SIG operated by sort-of sysop Fred Nachbaur. (604) 354-4666 is the number to call to get access to the latest hi-res programs, files, etc. The BBS operates 1800-0900 PST every day and all day Sunday. Set your modem for 8-N-1 and give it a try. Complete details in a coming issue of SWN.

JOHN McMICHAEL, 1710 Palmer Dr., Laramie, WY 82070, is marketing hardware and software to interface the TS2068 to a Commodore 1520 Printer/Plotter. Prices for the hardware range from \$14.95 for a bare board to \$30.95 for an assembled and tested unit. The interface hardware includes driver/demo software. Other software packages include Pic-Plot, an auto screen dump utility, Bannerific, banner making software, and CMS/1520, a compatibility patch for Customized Mscript V5 or V5.2. Software is priced at \$8.95 each, ppd.

GREY & CLIFFORD COMPUTER PRODUCTS, P. O. Box 2186, Inglewood, CA 90305, (213) 759-7406, announces the release of the latest version of SPECTERM-64 (TS-4.1). This latest release is available on either JLO Safe (v 2.3 or later) or AERCO disks. \$35.00 + \$3 S&H. Also new to the Grey & Clifford line of products is TMX-64, a 64-column BBS software package for the TS2068. The package is said to allow you to set up a 300/1200 baud BBS system on your TS2068 computer. Written by Kurt Casby, the price is \$30.00 + \$2 S&H. Call for details.

## TELECOMM UPDATE

By Fred Nachbaur

### Attention ZX Users

The ZX81/TS1000 family has traditionally been relegated to the "backwaters" of various BBS's and communications services. Not any more! We now have a sub-board solely devoted to ZX programs and other files. The SYSOP of the Nicolson Nighttime Network has allowed me to set up the "ZX-TERM Exchange" within the framework of his BBS. The board is free; you WILL NOT be called back collect to "verify" that you are who you say you are when you log on. It operates at 300 or 1200 baud, 8/N/1, and can be reached from 1800-0900 PST every night, and all day Sunday, at (604) 354-4666.

Specify SIG 3 in the message base to read/leave ZX-related messages. All ZX files in the Files section have "ZX" as the first two letters in the name, making it easy to "mask" only the files of interest when requesting a catalog. At this writing (Feb. 1988), over two dozen files are available. They

include several new programs, including high-res (both "true" and "quasi"). Several programs are "shareware;" download them freely, but have the honesty to pay the author whatever you think his work is worth.

Other files include support for ZX-TERM\*80, RLE pictures, etc. Give us a call! General info on the ZX-TERM Exchange are available by pressing (Info, then (D). General board info is available by pressing (A). Pressing return or entering ? at any menu gives a list of options.



Example of Run Length Encoded (RLE) Graphic from Nicolson Nighttime Network.

# FORUM

## Won't You Come Home, Don Dailey?

Dear Editor, I recently purchased a modified chip for the T/S1000 for use with the Byte Back interface from Don Dailey through an ad in your magazine.

I've got some questions about the program, specifically, setting the printer format for my 80-column printer and use of ZX PRO/FILE. I can't figure out the program modifications.

I've tried reaching Don at the Montana address you gave in your ad, with no luck.

If you gentlemen have another mailing address or a phone number for Don I would appreciate it.

Louis Thorpe  
Atlanta, GA

*Don, are you listening? Please let us know where you are--we hate to lose a friend.*

*Incidentally, can any of our readers help, either to find Don or to answer the question?*

## Picking Up The PCs

Sergio Frost of San Diego writes a provocative letter. Rather than quote the whole letter, let me summarize it a bit.

Sergio comments on our recent mentions of the PC, and notes that the thing that keeps him from converting to the Other Guys is the fact that he has invested heavily in Sinclair-specific hardware and software.

He goes on (my apologies to Sergio for paraphrasing a bit here and there--blame the typos on me): "I think the column would have a chance (and readership would increase) if, for a while at least, the column was devoted to information on how to convert TS2068 hardware to IBM PC use." He hopes that the modifications could be non-invasive, as the physicians put it, so you just plug in components, converters, emulators, or what have you.

*How about it, out there? Anybody interested? More important, can anyone come up with even partial solutions to this problem that will probably bug all of us, sooner or later?*

## Fast-Load Won't

Dear Editor, I have been using the excellent word-processing program, Word Sinc 340 successfully with my ZX81 and TIMEX 2040 printer. I have, however, not been able to get the fast load/save version to work at all despite many attempts.

Upon loading the short fast loader, all I get is a blank screen and thus no way to enter the GOTO 1000 command. To check the loading I have used the Bad

Load utility (SWN 2:2, p.4) and get consistent listings of the loader that do operate with GOTO 1000. Can you or your readers assist me?

Ken George  
Guanica, Puerto Rico

## FRED REPLIES

I haven't personally used WS-340, so I can't address your fast-load problem directly. However, my experience with several different fast-load routines is that they are highly hardware- and firmware-dependent. By "hardware" I mean tape recorders, by "firmware" I mean tape.

Regarding hardware, some systems like to see a reversed playback phase in order to work properly. Make up a "backwards" loading cable; i.e., the "tip" of one goes to the "ground" on the other, and

## SyncWare News

|                  |                    |
|------------------|--------------------|
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Real tough questions, matters concerning hardware, and everything else should go to Fred at:

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Nelson, BC V1L 5P1  
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(604) 354-3858

Back issues of SWN are available for \$3.50 each. Vol. #1 (for the 1000) is available for \$16.95, US postage included.

SWN is done entirely on TS computers. Submissions are preferred as word processed text files recorded on good quality tape. Memotext for the 1000 and Mscript for the 2068 are the preferred word processors. Documents submitted in Tasword Two or other word processors must be done in 52-column format. If you do not have a word processor, but you feel you have a good idea, then don't hesitate to work it up and submit it. Complete writers' guidelines are available upon request from the Indiana editorial office. Advertisers' rate cards from the publisher, at the Ohio address.

SWN pays authors about \$40 per page for original articles. Payment is made at time of publication.

vice versa. Try using this to load your previously fast-saved programs/data. Be sure to disconnect the MIC (SAVE) cable! (Incidentally, this is always good practice.)

Regarding firmware, try different brands of tape. I've found that TDK chrome tapes work best for me. (Don't worry about the fact that your recorder doesn't have a chrome setting. We're not concerned with hi-fi here, only that we have a clean, bright signal.)

If still no go, contact Peter McMullin, 2340 Queen St. East, Toronto Ontario M4E 1G9 for his sage advice.

## More On The PC

Dear Editor,

1. Your module/checklist left out an essential item, the BIOS...and while I was trying to decide which 386 machine to buy, I learned that there are illegal ones and some very poor ones on the market. I wound up with Phoenix BIOS-386 and it works well on my ALR 386.
2. Your statement that DOS (MS or PC) automatically contains BASIC is wrong. It can be included as a "no-cost" extra, but unless the specs list BASIC, it won't be there! Microsoft's GW BASIC is identical to IBM's "Advanced BASIC" (usually called BASIC A) with the same release number.
3. Get the highest release number of DOS and BASIC that your machine will handle.
4. And you should have mentioned the 8087 (80287-80387) when you were discussing TURBO PCs.

Dave English  
Orange, CA

P.S. Oh yes! I had a heck of a lot more parts plugged and wired into my TS1000 than I need on my ALR.

REPLY (of sorts)

We'll pass this one along without comment--probably Dave knows a lot more on the subject than any of us here at SWN. One thing that I (Basil) will heartily endorse, though: whenever you buy any software, it's wise to get the latest possible version, unless you have a compelling reason not to. Or, as a piece of oral graffiti I once heard has it: never buy version 1 of anything.

## Fury, No Sound

Dear Editor, I refer to Mr. Lou Dooly's letter in Vol. 5 #1 with reference to T. (J) G. Morley's letter about the screen tearing on the Sears TV/monitor.

My monitor now works perfectly. First, a TV repair man suggested that the sync on the composite output might be too strong, so I inserted a 10K pot in series with the composite output on the 2068. The TV cleared up at about 100 ohms. The solution was a 100 ohm 1W resistor in series in the composite cable.

I do not like using resistor circuits so instead of the simple circuit in the 2068 service manual I

used a CMOS inverter and buffer circuit on the RGB output. No good. Finally, after much fiddling, I went to a transistor inverter and straight connections to RGB. What a beautiful sight! The color was a little different from the composite color, but very acceptable.

My only problem now is no sound. Why Sears (or anyone for that matter) would put out an RGB monitor without sound capabilities is beyond me.

It appears from the circuit diagram that the audio is disconnected when you switch from composite to RGB.

I would appreciate hearing what some others have done with the audio, short of a separate audio amplifier.

T. G. Morley  
T or C, New Mexico

## FRED REPLIES

The sound quality of the TS2068 speaker does leave a lot to be desired, as does its audio driver circuit. Furthermore, there is no way to vary the volume. Many composite monitors have a built-in amplifier and speaker, but as you pointed out, manufacturers of RGB monitors generally don't include this for their own obscure reasons.

You do need some sort of external amplifier/speaker combo. Radio Shack has such a thing at reasonable cost (around \$15).

Do you have an old portable radio kicking around? If so, try running the sound to the two outside terminals of the volume control, and tune the radio to a quiet spot on the dial. DO NOT use "AC-DC" type radios (e.g. the old "all-America 5-tube" sets, or the so-called "transformerless" sets) for this!

Another possibility is an old el-cheapo stereo with "line in" or "phono" input.

Finally, you can call your tape recorder into service. Run the sound into the MIC jack through an attenuator cable (from Radio Shack). Connect a speaker, in series with a 100-ohm rheostat (potentiometer) to the EAR jack. Put in a cassette with the tape cut or removed to allow enabling RECORD mode. Voila! Plenty of volume.

(Editor's note): Don't take that warning about "transformerless" radios lightly. If you make a direct ground connection to the wrong side of the line, you run the risk of blowing fuses, radio, and computer, or--literally--of killing yourself. Whichever comes first.

By the way, there's a delightful geography lesson in this letter. There really is a T or C (Truth or Consequences) in New Mexico, on the Rio Grande, right between Elephant Butte and Caballo Reservoir. ZIP code 87901. What's the story behind the name, T.G.?

## Columbus Day

One of my first opportunities as your Editor was to attend a mass meeting of Users' Groups in Columbus, Ohio. This was on January 30, a day between (well, sort of) snowstorms. Including your Publisher and your Editor, there were 18 TS enthusiasts there,

coming from places as diverse as Columbus (of course), several Indiana cities, the two Louisvilles (OH and KY) and a number of locations in western Pennsylvania.

Kudos to Mowgli Assor, of Columbus, who arranged the meeting. I didn't get the whole story, but it appears that Mowgli was Shanghaied into the job, as the result of some "innocent" eavesdropping he was doing at the time.

Whatever, he did a darned good job of it.

Mowgli, who got his name from the Kipling stories, pronounces the MOW to rhyme with "grow", the gli just like "glee". Accent on the MOW. Like the actress telling the director, "Land sake, ah'm as happy as a clam already. You can't possibly expect me to show any mo' glee."

Sorry about that, Mowgli. I never was any good at dialect. (He tells us that he has a brother called Tigger, by the way.)

But whatever, Mowgli deserves high praise, both for organizing the meeting and for keeping it running smoothly. As you might guess, running a meeting of TS nuts is something like driving a herd of eels.

We talked about computer shows, and decided that there would probably not be a mid-West TS show this year. One of the reasons for the decision was that, with the Orlando show coming up, we didn't want to overburden our exhibitors.

HOW ABOUT THAT, you vendors of TS equipment, peripherals, software, or what-have-you? You know better than we do how often you'd like to go to shows. And what's your point of view on the whole subject? Maybe one of you would like to do a full-length article on the vendor's-eye view of exhibitions. How do you feel about them? How can the organizers best help you? What do you want to know from the public? How often do you want to attend shows? How can SyncWare News help you to communicate with your customers?

We'll pay you our regular authors' rates for a good article.

Me, I love them. (The shows, that is.) Not only are they fun, but they help sales. And it has long been my motto that an honest business deal brings benefit to all parties concerned.

## What's In A Name?

We also talked about the term COMPUTERFEST. Gary Ganger pointed out that the term is owned by the Dayton Microcomputer Association, Inc. Owned and protected by copyright. Gary went on to announce that the Association would let other groups use the term occasionally. He did not say how often, or on what terms, but I would expect that foremost among the conditions of use would be the assurance that no-one would bring discredit to the name. I know that this thought is uppermost in the mind of Harvey Phillips, my tuba teacher, who owns the term OCTUBAFEST.

Gary also claimed that the copyright covered all permutations of the name--capitals and lower case, hyphens, asterisks, whatever. Now, my knowledge of law comes from reading Perry Mason instead of Blackstone, and I don't know how close to a generic term you can come and still claim a valid copyright. But I've always been a strong supporter

of ethics and courtesy. Let's not pirate the name. If the DMA is willing to give permission to use the name, let's ask for permission, and give credit when it's granted. If they're not willing to give that permission, send me a prospectus of the event, and I'll suggest between 3 and 100 names that you could use. Although you could probably think of a better name yourself.

(I don't think that this is what Shakespeare had in mind when he said "who steals my good name steals everything", but I couldn't resist setting up the pun "who steals my purse steals cash".)

If you do want to ask permission to use the term COMPUTERFEST, get in touch with

Dayton Microcomputer Association, Inc.  
c/o Dayton Museum of Natural History  
2629 Ridge Avenue  
Dayton, OH 45414-5499

## Hints to Users' Groups

Several valuable suggestions for UGs came out of the Columbus meeting. Which proves the value of UGs in general and, even more so, the value of inter-group meetings. Among the suggestions were:

- > Use TS computers to teach computing. This is not a new concept--many of us have preached and practiced this precept for years--but it can never be repeated often enough.
- > Exchange video tapes of UG meetings. This could be especially useful in cases where formal presentations are made.
- > Get local newspapers to publish features on people using TS computers in the "real world".
- > Distribute free copies of your newsletters to public libraries. (Actually, there's no reason to limit this to public libraries. Think of universities, schools, companies.) The marginal cost of a copy is but pennies, and who knows when you'll find a prospective new member?

## SWN And Users' Groups

This is a drum that we are going to beat loud and long. We want to help UGs to survive and prosper. Anyone who has suggestions as to how we can do this, please let us know. We've made a couple of offers already. Here are a couple more, that grew out of the Columbus meeting.

We'll be glad to publish catalogs of public domain programs available from UGs. Please make sure that the programs you offer really are public domain--we will take no responsibility other than publishing in good faith information that we assume was offered to us in equally good faith. Tell us what programs you have (including a short description, even if you think that every schoolboy should know already), in what format you can furnish them, and on what terms you offer them, including your charge for duplicating, packing, and shipping. AND, of course, the name and address of a person to contact.

We offer another exchange of information: we'll give you a list of our subscribers within a reasonable radius of your center of operations (it would help if you could give us ZIP code numbers)

in return for a list of your members. We expect you to treat this offer with respect, and not to use our lists for any other purpose than soliciting membership. We'll make a similar commitment to hold your list in confidence.

## A Word To Authors

Here are a few tips for any of you who ever wanted to get your name (and your thoughts) before the public.

1. We want you to write. Without authors, we wouldn't have a magazine. Without the interaction of ideas, we wouldn't have a civilization.
2. Write what interests you. Most of the programs I write are in response to my own needs. I suppose it's possible for someone to think "Well, today I'm going to sit down and invent the wheel", as a sort of abstract exercise. But most of us invent our wheels to fill a need for easier transportation.
3. Write in our format. Your own words, sure, but our format. Know now that an editor is a lazy creature. He gives first preference to the article that requires the least effort on his part. If all he has to do is to delete three words (he's always got to monkey with the script a little bit, to satisfy his own ego), he's more likely to accept it than if he has to spend hours reworking it. This is true not only of SWN but also in the case of media releases, poetry, and the Great American Novel.
4. A corollary to 3: sometimes an idea, though badly expressed, is so good that we can't turn it down--an offering we can't refuse, as it were. If we have to put in a lot of editorial work on it, we scale down our payment accordingly. Even worse, there is a chance that our corrections of form will affect the substance of the article, and your great idea may get buried under our "corrections".
5. We like our old friends, but we'd like to hear from new authors, too. I don't remember ever having seen an article by a woman. Why not? Why not from teenagers?
6. We like to have your work in MEMOTEXT or MSCRIPT. We're equipped to handle them. But I've been sending in my stuff for years on a rinky-dink word processor I wrote myself. The trick, however, is that I've always accompanied each submission with a copy of the word-processor program, and complete but SIMPLE instructions on how to use it.
7. Your contribution doesn't have to be earth-shaking, or abstruse, or incomprehensible. We don't expect you all to be Bents or Nachbours. What your work must be is INTERESTING. My own interest is usually piqued most by articles that invite modification to suit other applications. The sort of thing that makes me think "Hey! That's great, but what if...?" Or "If I just...then I could make this program..." Or, as the raconteur always begins, "That reminds me of..."
8. Therefore, if you see ways in which something we publish can be improved, send them in. It needn't be a full-blown tutorial--just a sentence or two. Be tactful, though--as the aphorist says, always

use sweet words, because you never know when you might have to eat them. But be especially careful in this case, because we're going to send your comments to the author before we publish them, and will accompany them with the author's rebuttal, if any.

9. If your program is interesting enough, it doesn't even have to work. But BE HONEST. If it doesn't work, say so, and tell us why you expected it would work, and what you've done to try to get it going. There's the ultimate in challenge. But only for short programs, please. Don't expect our readers to wade through pages and pages in order to find one misplaced comma. Isolate the problem, and send us only that part.

10. We would even consider publishing non-programs. Or perhaps I should say pre-programs. Tom Woods once told me that a computer is a solution looking for problems. Maybe you have the problem. Send us a set of specifications of what you want your computer to do, what constraints there are on the solution, and any suggestions you have.

## Author Guideline

### RULES FOR AUTHORS

We prefer articles in ready-to-go form. MSCRIPT or MEMOTEXT, or your own word processor IF you include the processor program. (We don't expect you to violate copyright laws by making an unauthorized copy of a proprietary word-processor program.)

No material will be returned to you unless you say you want it back AND send us enough money to pay for postage and for new wrapping material, if needed. Checks or money orders payable in US currency, please--no cash or subway tokens.

If you send material on disc, it should be formatted for AERCO interface.

Articles should be submitted in the typographical style you see in SWN: 52 characters per line, capitals and lower case letters, no special symbols. Single spaced lines, one blank line between paragraphs. Do not indent paragraphs. Use only a single space between sentences.

Start your description of each program with a list of what equipment you need: for instance, ZX81/TS1000 or TS2068? Extra RAMPACK? How big? Joystick? What else? This information should also appear on the cassette, or on the disc envelope. Your description should also tell us what the program does, of course.

Your name and address, and the title of the program, should appear on the cassette or disc envelope, and should also appear in a REM statement at the top of the program. We'll DELETE your address before we publish. But please take this requirement VERY seriously. It doesn't do either you or us any good if we can't tell whose program we're working with.

If your program is based on someone else's work, be fair, and acknowledge that fact. Credit where credit is due. Also, that knowledge may help our readers to get more out of your article.

# POUNDING BRASS AND BLINKING SYMBOLS

You might at some time have read a story written in round-robin technique. A story that is started by one author, and finished by another, with perhaps one or more other authors contributing "middle" sections. And all working independently.

We have something like that this month--a trilogy of programs on related subjects, but done by three separate authors, each working without reference to either of the other programs.

As you know, there are three methods of signalling in widespread use: audible Morse, blinker Morse, and two-handed semaphore. We also used to use a single-flag wig-wag when I was in the Boy Scouts, but that system is much slower than semaphore, its direct competitor.

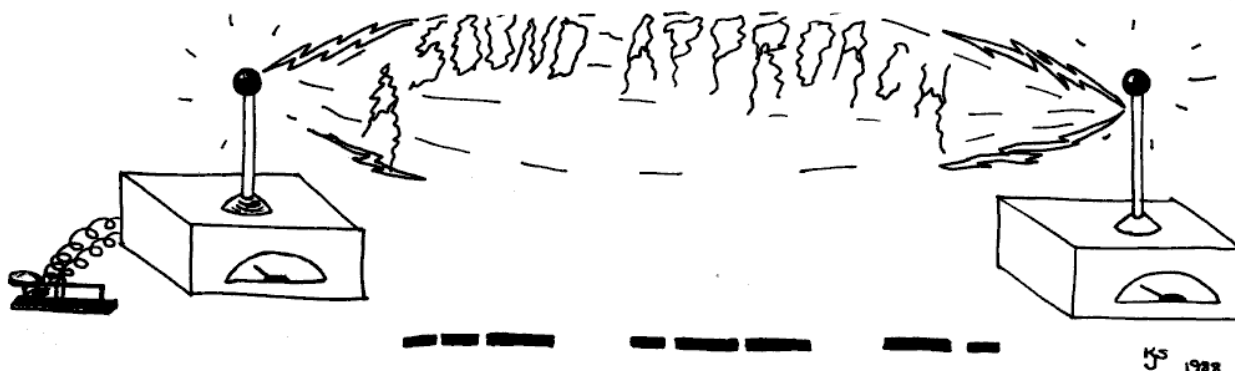
Of course, there are also more exotic systems, like radio-teletype and telepathy; and less complicated systems, like megaphones, sign language, talking drums, and visually outlining the letters of a message. But let's pretend that there aren't.

After spending several years as supervisor of the radio gang in the US Navy during the 1940's (notice, I said "supervisor", which means that I didn't really have to learn the code myself), I naturally went audio for my SWN contest entry. Besides, I'm a lover of music--remember?

Sheldon Gilbert, a sailing enthusiast, chose semaphore. This system requires the barest minimum of space and weight allowance for equipment--actually, you can send semaphore quite satisfactorily with your bare hands--so it is understandably popular on small boats.

Peter Wentworth, with more recent experience in the Navy, took the blinker approach. Blinker has one distinct advantage over semaphore--it can be used in total darkness.

NOTE: I suppose that I should apologize for the titles I gave these articles, but you can't say you weren't warned.



TS2068, BASIC  
Contest entry  
Basil Wentworth

## ...And Under the Hood

This trainer incorporates the following features:

- Pitch of BEEP tone: adjustable.
- Speed: adjustable over the range of 2-15 words per minute.
- Display: optional. You can display each character at the time that it is "transmitted", or you can wait and display the entire text after the exercise is finished.
- Operating modes:
  1. Letter-by-letter. The keyboard acts like a typewriter, BEEPing out the Morse equivalent each time a key is pressed. This mode is most useful for beginners.

2. Prepared text. A text, pre-typed by the instructor, is "transmitted" at the selected speed.

3. Random characters. The computer generates its own text of random characters, in 5-character "words". Once this mode is turned on, it continues inexorably (might one say remorselessly?) until the BREAK key is pressed. However, if you want to use it for background music, be sure that you operate in the non-display mode, or the program will stop when the screen is full.

The program will not be seriously damaged by RUN or CLEAR. However, the speed will have to be reset after either of those commands--so will the BEEP frequency, unless you have exercised the option of setting it permanently via line 40. Also, RUN or CLEAR will lose any text that you may have been saving to display at the end of the exercise.

## Operation

When the program is LOADED, you are given a sample of the BEEP tone. If you like it, press "ENTER". If it is not to your taste, you can adjust it a



semi-tone at a time by "h" or "l" (for "high" and "low", of course), or 4 semi-tones at a time by using the corresponding capital letters. Once you get a tone that you like, you can perpetuate this preference by changing line 40, which the computer very kindly LISTS for that very purpose.  
Then GO TO 1.

The menu, which can be recalled at any time by BREAK:GO TO 1, offers you the options of SAVING the program, PRINTING the text that was used in the exercise just finished, or CONTINUING with the drill.

If you choose the option to CONTINUE, you are given the choice of modes of operation described above.

Z\$, listed at the top of the program, includes all of the characters that the trainer can cope with. This string is used during the generation of random characters, to make sure that the random generator doesn't choose symbols that the program isn't set up to handle. If you want to add other characters--or, for that matter, to delete some of those that are included--you must make the appropriate adjustment in Z\$ and in the line bearing the number (500+c), where c is the CODE of the character you are adding or deleting.

One WARNING: if you delete any lines in the 500-755 area, be sure that you replace them by a RETURN instruction. Similarly, any lines added should incorporate a RETURN.

```

10 REM initialize
20 LET Z$=".,-./0123456789?ABCD
EFGHIJKLMNOPQRSTUVWXYZ"
30 POKE 23658,0: REM lower cas
e letters
40 LET freq=16
50 LET w=10
60 GO TO 1000: REM menu
80 PRINT "OK?"
90 PRINT "y- n-": REM VERIFY
100 REM INKEY$
110 PAUSE 0
120 LET c=CODE INKEY$
130 LET ok=(c=89)+(c=121)
140 RETURN
200 REM dit/dah
210 LET d$=""
220 GO SUB (500+CODE ($))
230 IF d$="" THEN RETURN
250 FOR d=1 TO LEN d$
260 IF d$(d)<>"." AND d$(d)<>"-
" THEN RETURN
270 IF d$(d)="" THEN BEEP .05,
freq
280 IF d$(d)="-" THEN BEEP .15,
freq
290 NEXT d
300 RETURN
530 REM CHR$
543 RETURN
544 LET d$="--->": RETURN
545 LET d$="--->": RETURN
546 LET d$="--->": RETURN
547 LET d$="--->": RETURN
548 LET d$="---0": RETURN
549 LET d$="---1": RETURN
550 LET d$="---2": RETURN
551 LET d$="---3": RETURN
552 LET d$="---4": RETURN
553 LET d$="---5": RETURN
554 LET d$="---6": RETURN
555 LET d$="---7": RETURN
556 LET d$="---8": RETURN
557 LET d$="---9": RETURN
562 RETURN
563 LET d$="---.?": RETURN
564 RETURN
565 LET d$="---A": RETURN
566 LET d$="---B": RETURN
567 LET d$="---C": RETURN
568 LET d$="---D": RETURN
569 LET d$="---E": RETURN
570 LET d$="---F": RETURN
571 LET d$="---G": RETURN
572 LET d$="---H": RETURN
573 LET d$="---I": RETURN

```

```

574 LET d$="---J": RETURN
575 LET d$="---K": RETURN
576 LET d$="---L": RETURN
577 LET d$="---M": RETURN
578 LET d$="---N": RETURN
579 LET d$="---O": RETURN
580 LET d$="---P": RETURN
581 LET d$="---Q": RETURN
582 LET d$="---R": RETURN
583 LET d$="---S": RETURN
584 LET d$="---T": RETURN
585 LET d$="---U": RETURN
586 LET d$="---V": RETURN
587 LET d$="---W": RETURN
588 LET d$="---X": RETURN
589 LET d$="---Y": RETURN
590 LET d$="---Z": RETURN
656 RETURN
1000 REM menu
1010 CLS
1020 PRINT "PRESS TO "
1030 PRINT "C Continue wit
hexercise"
1040 PRINT "P Print text"
1050 PRINT "S SAVE program"
1060 PRINT "You can return to
menu at any"
1070 PRINT "time by BREAK:GO TO
1"
1080 PRINT "To reset the frequ
ency of the"
1090 PRINT "audio tone, BREAK:GO
TO 9200"
1200 GO SUB 100
1210 IF c=83 OR c=115 THEN GO TO
9000: REM SAVE
1220 IF c=80 OR c=112 THEN CLS :
PRINT m$: STOP: REM PRINT
1290 IF c<>67 AND c<>99 THEN GO
TO 1200: REM invalid entry
1500 REM INPUT
1510 CLS
1520 PRINT "PRESS FOR "
1530 PRINT "L Letter-by-
letter input"
1540 PRINT " (typewri
ter)"
1550 PRINT "t Text drill"
1560 PRINT "r Random lett
er drill"
1570 LET ra=0
1600 GO SUB 100
1610 POKE 23658,8: REM capitals
1620 IF c=76 OR c=108 THEN GO TO
2000: REM typewriter
1630 IF c=84 OR c=116 THEN GO TO
2500: REM text
1640 IF c=82 OR c=114 THEN GO TO
3000
1650 GO TO 1600: REM invalid ent
ry
1999 STOP
2000 REM typewriter
2010 CLS
2020 POKE 23658,8: REM capitals
2030 PRINT "Enter text, letter b
y letter"
2040 LET m$=""
2050 GO SUB 100
2060 LET l$=CHR$ c
2070 GO SUB 200
2080 PRINT l$
2090 LET m$=m$+l$
2100 GO TO 2050
2500 REM text drill
2510 CLS
2520 GO SUB 5000: REM display?
2530 GO SUB 8000: REM speed
2590 POKE 23658,8
2610 CLS
2620 INPUT "Input text ";m$
2630 PRINT m$
2640 GO SUB 80
2650 IF NOT ok THEN GO TO 2610
2660 CLS
2670 PRINT "Press ""ENTER"" to s
tart drill"
2680 GO SUB 100
2690 GO TO 4000
3000 REM random CHR$
3010 LET ra=1
3020 CLS
3030 GO SUB 5000: REM display?
3040 GO SUB 8000: REM speed
3050 CLS
3060 PRINT "Press ""ENTER"" to
start drill"
3090 GO SUB 100
3100 POKE 23658,8
3110 CLS
3120 LET m$=""
3130 FOR f=1 TO 5
3140 LET n=INT (41+RND)*1
3160 LET l$=Z$(n)

```



```

3170 LET m$=m$+l$
3210 GO SUB 200
3240 IF disp THEN PRINT l$;
3250 PAUSE pause
3260 NEXT F
3270 PRINT " ";
3280 LET m$=m$+" "
3290 PAUSE 2*pause
3300 GO TO 3130
3999 STOP
4000 READ text
4010 CLS : PRINT
4020 FOR m=1 TO LEN m$
4030 LET l$=m$(m)
4040 GO SUB 200
4050 PAUSE pause
4060 IF disp THEN PRINT l$;
4070 NEXT m
4090 IF ra THEN RETURN
4999 STOP
5000 display?
5010 PRINT "Do you want each le
tter dis-";
5020 PRINT "played as it is ""tr
ansmitted""?";
5030 PRINT " ";
5040 GO SUB 90
5050 LET disp=ok
5060 RETURN
8000 speed
8010 CLS
8020 PRINT "How many words per
minute do";
8030 PRINT "you want (2-15)?";
8040 INPUT w
8050 IF w<2 OR w>15 THEN GO TO 8
040
8080 LET pause=-1+55*LN (15/(w-1
.5))
8090 RETURN
8999 STOP
9000 SAVE
9010 CLEAR
9020 CLS : SAVE "code" LINE 9200
9030 BEEP .3,15: BEEP 1,15
9040 PRINT "re-play tape to VER
IFY ";
9050 VERIFY "code"
9060 PRINT AT 10,10; FLASH 1;" V
ERIFY OK ";
9070 BEEP .3,12: BEEP 1,12
9080 STOP
9200 tune BEEP
9210 CLS
9220 POKE 23658,0: lower cas
e letters
9230 PRINT "First, tune the au
dio tone to";
9240 PRINT "suit your taste.";
9250 PRINT "The present pitch i
s as follows:";
9260 PRINT "Press ""ENTER"" if
OK";
9270 PRINT "Press ""h"" for hi
gher pitch;";
9280 PRINT """l"" for lower ("""H
"" and ""L"" for
9290 PRINT "much lower)";
9300 LET freq=16
9310 BEEP 1,freq
9320 GO SUB 100
9330 IF c=13 THEN GO TO 9500
9340 LET freq=freq+(c=104)-(c=10
8)+4*((c=72)-(c=75))
9350 GO TO 9310
9530 CLS
9540 PRINT "The frequency index
of the tone";
9550 PRINT "is now set at ";freq
;". You may";
9560 PRINT "wish to record this
setting in";
9570 PRINT "line 40.";
9580 PRINT "Then GO TO 1 to con
tinue.";
9590 PRINT
9600 LIST 40

```

Fig. 1 LISTING for SOUND program

## TYD☆BYTS

### USE THE BEEPER

The next time you have a program that takes a long time to run (or to SAVE/LOAD), save your patience by inserting a BEEP message to catch your attention when the job is finished. You can program the BEEP for a single note, a TA-DA!, or even for Beethoven's Fifth. Then you can enjoy your coffee, or work on your notes, or just doze off, and the computer will gently remind you when it wants your attention again.

With the ZX81/TS1000, without BEEP capability, you can get a similar effect if you leave your printer connected and ready to run. Just program LPRINT "" for the strategic moment. Your printer will give a discreet hiccup at the proper time.

If you really want to use Beethoven's Fifth, here's the program:

```

10 FOR F=1 TO 3
20 BEEP .2,7
30 NEXT F
40 BEEP 1,3

```

If you prefer the Firebird, that's a little more complicated.

### OLIGER 2068 EXPANSION BOARD PRECAUTION from the desk of Kent Cook

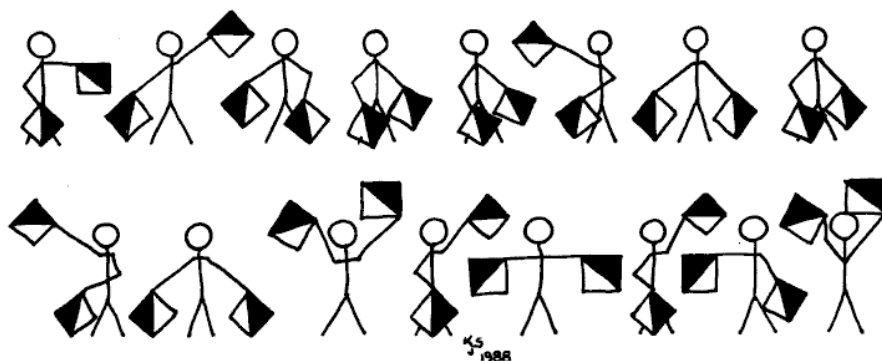
Run a strip of insulating material (plastic tape, for instance) along the exposed card-edge connector leads soldered to the top of the expansion board. My kitten pulled a loose power supply cord across my system and the coaxial plug contacted the bus, frying a 4416 in the TS2068. I lost a week in trouble-shooting and repairs. The kitten lost one of his 9 lives.

### PC8300 VIDEO FIX From Fred Nachbaur

One of the most common complaints with the PC8300 is that the characters tend to have a "splayed" look, with horizontal lines sticking out to the right. No, it's not because the Chinese designers didn't know how the characters are shaped. It's simply a matter of overdrive (video level or "contrast" too high).

The fix is remarkably simple. Connect a resistor (I used 4.7K) between pin 35 and pin 40 of the custom chip. This is the chip nearest the modulator. Pin 40 is the pin furthest to the right in the front row, as viewed from the front of the machine. Pin 35 is five pins to the left of pin 40. If you are experienced at soldering, simply solder the resistor directly to the "shoulders" of the pins. If not, you'd be better off removing the chip, and connecting the resistor to the socket on the underside of the board.

Lower values (e.g. 3.9K, 3.3K) will give more attenuation.



# Flagging Interest

TS 2068, BASIC  
Sheldon S. Gilbert

## A Learning Tool

My 2068 serves me as a useful tool to cope with the many demands of semi-retirement. I use it frequently to help me acquire new knowledge and skills, an activity that to me is a prime reason and delight of retirement.

As a retiree I get to spend more time on the water sailing than I did in the past and have found it desirable to hone some old nautical skills as well as to learn some new ones. In order to accomplish this I find it useful to enlist my 2068 to serve as a partner in learning even though quite frequently no program seems to exist for the two of us to use.

For this reason I wrote several programs that have helped me review and learn nautical signaling techniques. One of these programs, designed to provide drill in receiving semaphore signals, is given in the listing.

The program is only minimally interactive because I find that too much interactivity slows things down and defeats the purpose of the program in providing drill. In effect the computer serves as a study partner who if it were a real person would be too far off to talk to except by signalling.

Semaphore signaling, you may remember from your scouting days, is a system of visual communication whereby information is transmitted by the position of the sender's two hands normally holding a pair of hand flags for greater visibility. It is very useful for communicating across open spaces when the radio has conked out.

## How It Works

My program displays randomly selected semaphore signals in the form of two flags shown on the screen. After a suitable time during which the user may identify the letter represented by the signal the letter will appear on the screen. If in "AUTOMATIC RUN" mode the computer will repeat the process until approximately fifty signals with their corresponding letters have been shown. The user, particularly if he is early in the learning process or reviewing after a long vacation from semaphore, may prefer the "MANUAL CONTROL" mode. If so, the computer will ask if he wishes to see the signal for another letter after each signal has been shown and identified.

The program begins with the display of a menu permitting the user to choose either of the two modes, to seek instructions, or to stop the program.

The selection of either of the two display modes eventually leads back to line 10 where the routine to select flag positions begins. Each of the two flags may appear in one of eight possible positions. The position of the first flag is determined by Line 20 and that of the second flag by Line 30. Line 40 filters out duplicates and Line 45 eliminates the one set of flag positions that does not represent a letter. Line 50 sends the computer to the subroutine for drawing the border around the screen. It then alternates between setting the flag centers and referring the program to the appropriate flag drawing subroutine position until both flags are drawn.

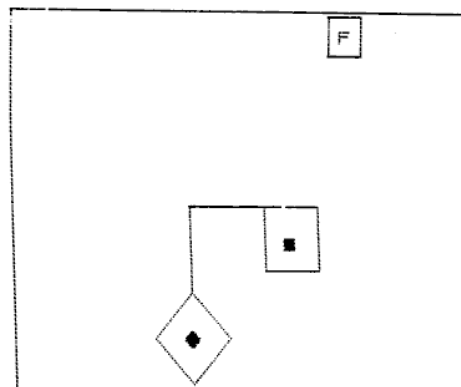
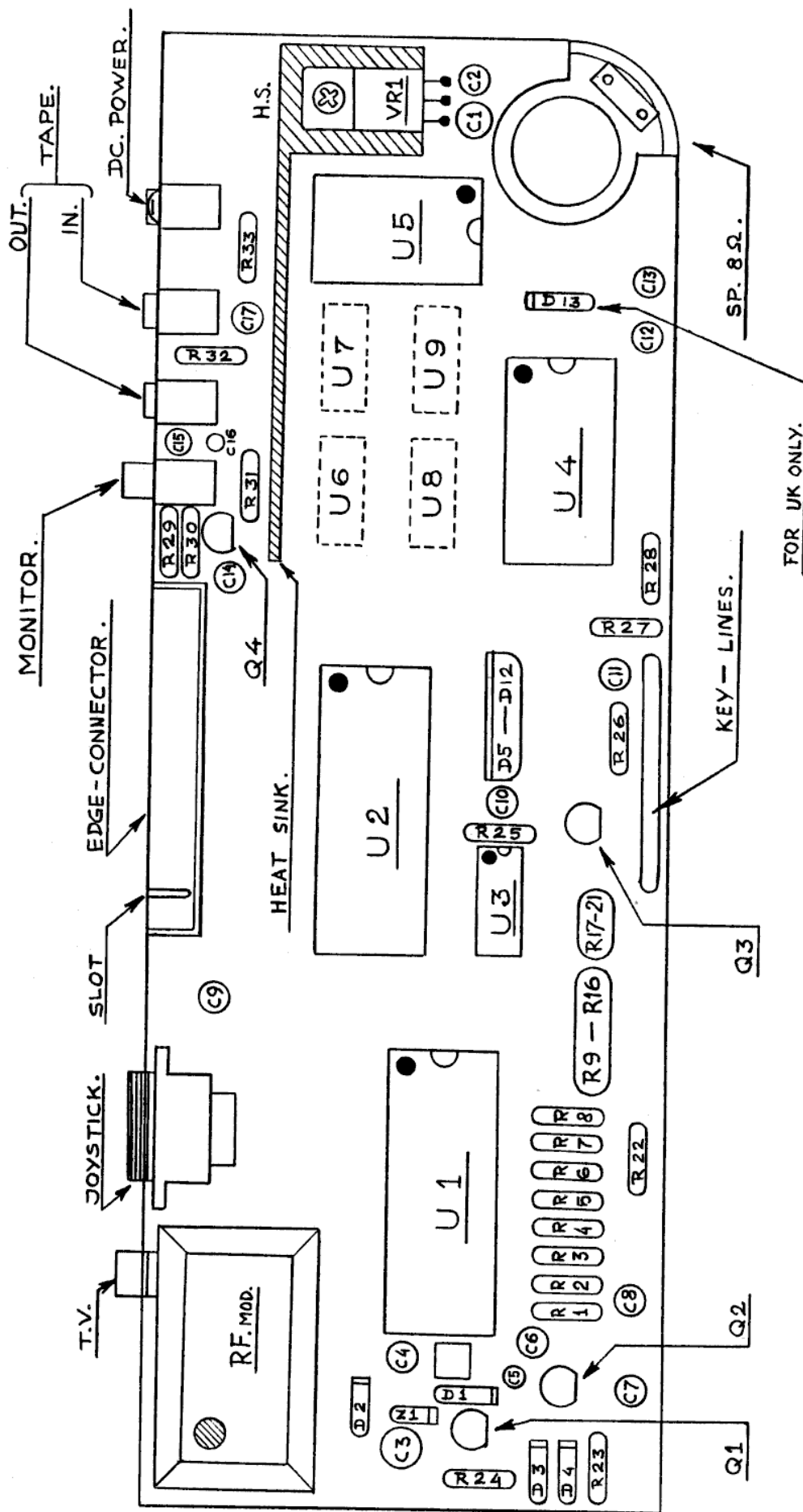


Fig.2 Semaphore Display

Up to this point the computer is ignorant of the meaning of the signal display it shows. It learns this by using Lines 7000, 7010, 7020 and 7030 to check out some simple arithmetical relationships of the of the numbers assigned to the flag positions. Then it compares its finding to the flag positions that have been chosen by Lines 20 and 30 and prints the letter equivalent. Logic operators were used to avoid clutter but IF...THEN statements would serve. (Editor's NOTE: lines 7000 to 7030 are well worth study by those who are not familiar with this technique.)

Lines 8000 to 8514 create the UDGs necessary for the flag centers. The rest of the program is straightforward.

CONTINUED ON PAGE 15



# PC 8300.

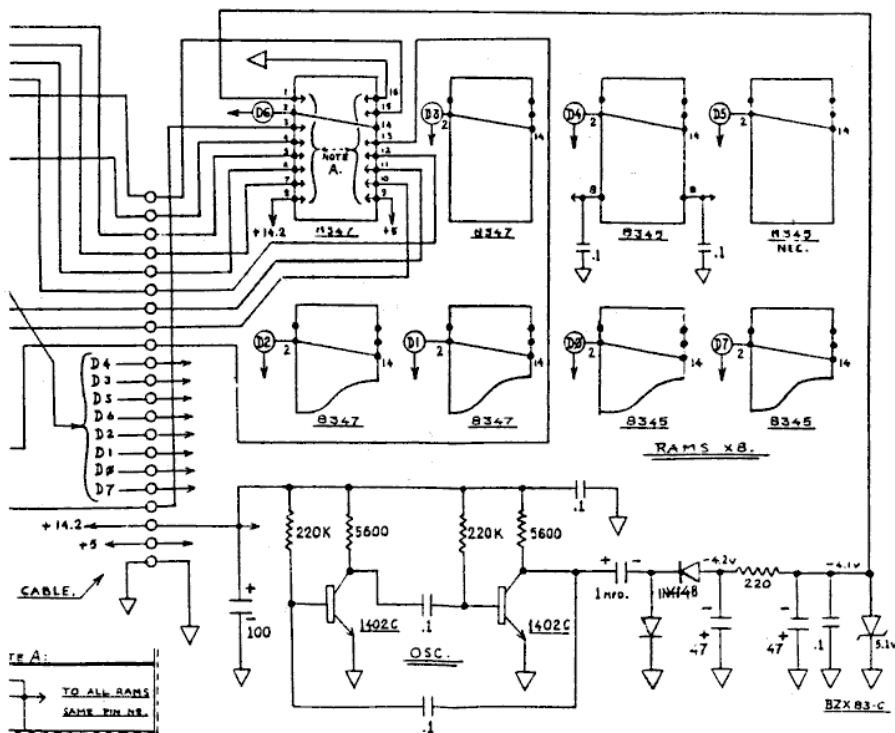
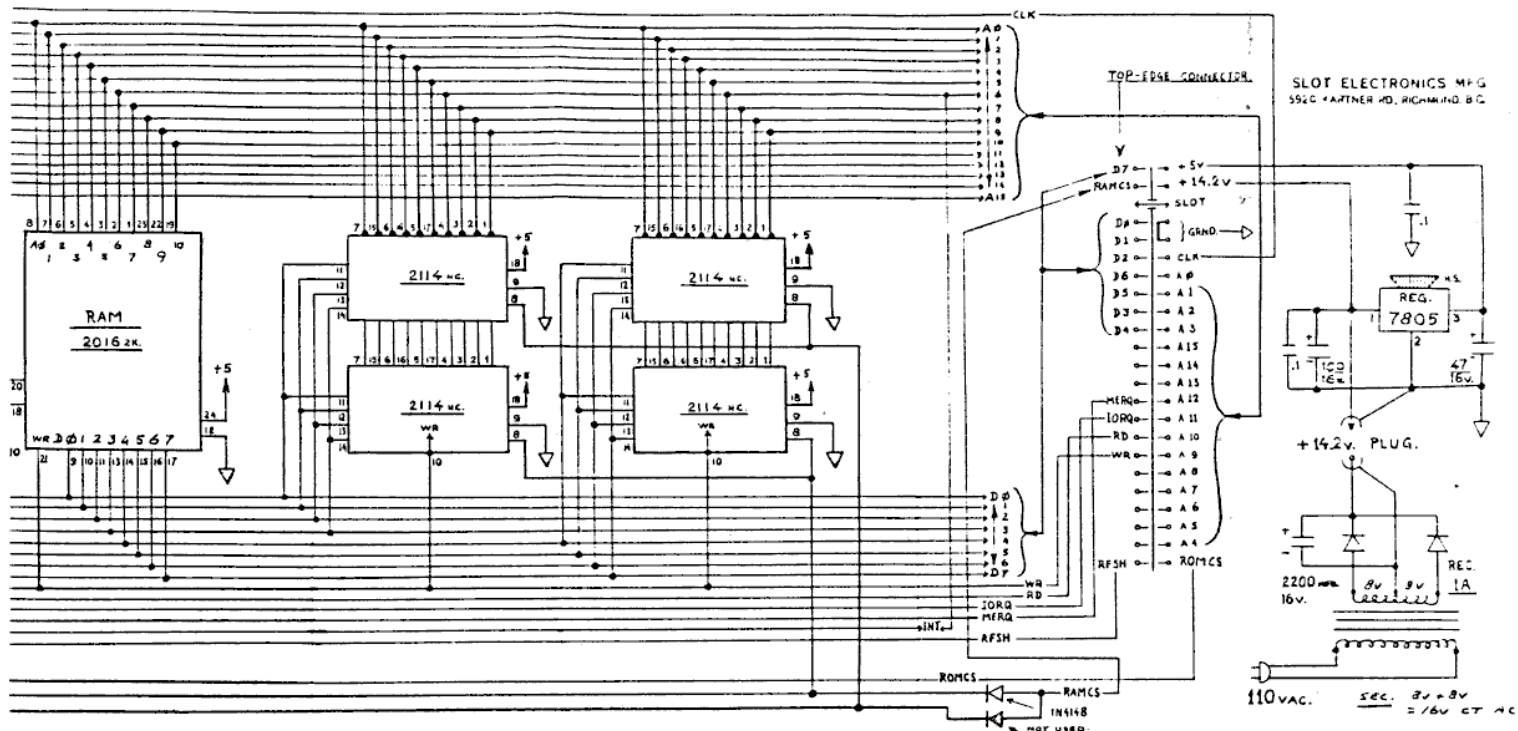
## CIRCUIT BOARD. TOP VIEW.

-SEE PARTS LIST-



Special Supplement to the Jan.-Feb. '88 issue  
of SyncWare News.





## PC 8300.

- ★ COMPUTER
- ★ RAM PACK
- ★ AND KEYBOARD

## SCHEMATIC



PC-8300 Schematic courtesy of:

SLOT ELECTRONICS MFG.  
5920 Kartner Road  
Richmond, BC V6V 1R9  
Canada

# PC 8300 PARTS LIST

|             |           |                          |                  |
|-------------|-----------|--------------------------|------------------|
| IC's        | U1        | C4005                    | ULA              |
|             | U2        | Z 80                     | CPU              |
|             | U3        | 74LS05                   | Inverter         |
|             | U4        | 8440                     | ROM              |
|             | U5        | 2016                     | RAM              |
|             | U6 - U9   |                          | Not Used (2114)  |
| REG's       | VR1       | 7805                     | Voltage Reg (5v) |
|             | Q1        | D227                     | Transistor Reg.  |
| ZENERS      | Z1        | Zener/Diode Combo (9.2v) |                  |
| DIODE       | D1 - D3   | 1N4148                   |                  |
| RESISTORS   | R1 - R8   | 10K                      |                  |
|             | R9 - R16  | 470                      |                  |
|             | R17 - R21 | 4700                     |                  |
|             | R22       | 10K                      |                  |
|             | R23       | 680                      |                  |
|             | R24       | 820                      |                  |
|             | R25       | 4700                     |                  |
|             | R26       | 220K                     |                  |
|             | R27 - R29 | 680                      |                  |
|             | R30       | 1K                       |                  |
|             | R31       | 470K                     |                  |
|             | R32       | 1K                       |                  |
|             | R33       | 220                      |                  |
| CAPACITORS  | C1        | 100 MFD 16v              |                  |
|             | C2 - C3   | 47 MFD 16v               |                  |
|             | C4        | .1 Ceramic Disk          |                  |
|             | C5        | 47 PF Disk               |                  |
|             | C6 - C9   | .1 Ceramic Disk          |                  |
|             | C10       | 200 PF Disk              |                  |
|             | C11 - C14 | .1 Ceramic Disk          |                  |
|             | C15       | .047 Ceramic Disk        |                  |
|             | C16       | 47 PF Disk               |                  |
|             | C17       | .01 Ceramic Disk         |                  |
| TRANSISTORS | Q2        | D227                     | Audio Amp        |
|             | Q3        | 1402C                    | Switching Amp    |
|             | Q4        | 1402C                    | Video Amp        |



Oh! Those funny little numbers dancing in the upper left hand corner? I put those in to check on how often the 2068 discarded a duplicate or useless flag position. I sort of like them but if you don't feel the same way just choose the fourth option on the menu, LIST 7045, type "n" to stop the scroll and delete the "PRINT i".

I refrained from translating any of this all BASIC program into machine code as it appeared to me nothing would be gained by increasing the speed of the program and memory is no problem. On the other hand, there is occasionally an illusion of movement at BASIC speed which I felt added to the program's charm.

```

5-SEM menu, instructions & in
italize
6 BORDER 4: PAPER 6: CLS : GO
SUB 6000
7 GO TO 5000
10 CLS : GO SUB 8000: FOR i=1
TO 50: CLS : GO SUB 9500:
15-SEM select flag position
20 LET b=INT (RND*8+1)
30 LET c=INT (RND*8+1)
38-SEM eliminate non-letters
40 IF b=c THEN GO TO 7042
45 IF b*c=48 THEN GO TO 7042
47-SEM plot start for flags &
look for flags
50 GO SUB 8700: PLOT 100,85: G
O SUB b*500: PLOT 100,85: GO SUB
c*500
112-SEM give time to answer th
en go to answer routine
114 PAUSE 100: GO SUB 6990
116-SEM implement auto-run or
manual
117 PAUSE 100: RUN
118 IF Z=2 THEN GO TO 7510
498-SEM draw flags & print cen
ters
499-SEM up flag
500 DRAW 0,40
510 DRAW 30/a,30/a: DRAW -30/a,
30/a: DRAW -30/a,-30/a: DRAW 30/
a,-30/a
520 INK 2: PRINT AT 3,12;"E": I
NK 0
550 RETURN
1000-SEM down flag
1008 DRAW 0,-40
1010 DRAW -30/a,-30/a: DRAW 30/a
,-30/a: DRAW 30/a,30/a: DRAW -30
/a,30/a
1020 INK 2: PRINT AT 18,12;"A"
1022 PRINT AT 19,12;"B": INK 0
1050 RETURN
1500-SEM right flag
1510 DRAW 72,0: DRAW 0,-30: DRAW
-30,0: DRAW 0,30
1520 INK 2: PRINT AT 13,19;"C":
INK 0
1550 RETURN
2000-SEM left flag
2010 DRAW -70,0: DRAW 0,-30: DRA
W 30,0: DRAW 0,30
2020 INK 2: PRINT AT 13,5;"C": I
NK 0
2040 RETURN
2500-SEM lower left flag
2520 DRAW -70/a,-70/a: DRAW 30/a
,-30/a: DRAW 30/a,30/a: DRAW -30
/a,30/a
2530 INK 2: PRINT AT 17,8;"FG":
INK 0
2550 RETURN
3000-SEM lower right flag
3010 PLOT 100,85
3020 DRAW 70/a,-70/a: DRAW -30/a
,-30/a: DRAW -30/a,30/a: DRAW 30
/a,30/a
3030 INK 2: PRINT AT 17,15;"FG":
INK 0
3050 RETURN
3500-SEM upper right flag
3520 DRAW 70/a,70/a: DRAW 30/a,-
30/a: DRAW -30/a,-30/a: DRAW -30
/a,30/a
3530 INK 2: PRINT AT 7,18;"A"
3535 PRINT AT 8,18;"B": INK 0
3550 RETURN
4000-SEM upper left flag
4020 DRAW -70/a,70/a: DRAW -30/a
,-30/a: DRAW 30/a,-30/a: DRAW 30
/a,30/a
4030 INK 2: PRINT AT 7,6;"A"
4035 PRINT AT 8,6;"B": INK 0

```

```

4050 RETURN
5000-SEM instructions
5010 CLS : PRINT TAB 10;"INSTRUC
TIONS"
5020 PRINT "This program is desi
gned to help you learn to read se
maphore code"
5030 PRINT "You have two choices
:1)The mach-ine will show you a
letter,give you a short time to
decide what it is,then show you
the answer & go on to another l
etter.After about 50 letters it
will give you a chance to cont
inue,"
5035 PRINT "change to Choice 2,o
r STOP"
5040 PRINT "2)You may have the p
rogram show you a letter, give y
ou a short time to decide what
it is and wait for you to ask
for another letter,"
5045 PRINT "Press any key to con
tinue." : PAUSE 0
5050 IF INKEY$<> " " THEN GO TO 6
6000-SEM menu to choose auto-run
n
6005 CLS : GO SUB 8700
6010 PRINT AT 2,9;"SEMAPHORE DRI
LL"
6020 PRINT AT 7,4;"PLEASE CHOOSE
ONE"
6030 PRINT AT 10,6;"1) AUTOMATI
C RUN"
6040 PRINT AT 12,6;"2) MANUAL C
ONTROL"
6042 PRINT AT 14,6;"3) SEE INST
RUCTIONS"
6044 PRINT AT 16,6;"4) STOP PRO
GRAM"
6050 INPUT Z
6500-SEM puts menu choice into
effect
6605 IF Z=4 THEN STOP
6610 GO TO (10 AND Z=1)+(7700 AN
D Z=2)+(5000 AND Z=3)+(6050 AND
Z<1 AND Z>4))
6990-SEM draw answer box
6995 PLOT 197,155: DRAW 0,18: DR
AW -18,0: DRAW 0,-18: DRAW 18,0

```

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```

6998 REM answer routine
7000 PRINT AT 1,23; ("A" AND c=b=
10)+("B" AND c=b=8 AND c+b=5)+("
C" AND c=b=16 AND c+b=4)+("D" AND
c+b=2)+("E" AND c+b=14)+("F" AN
D c+b=6 AND c+b=5)+("G" AND c+b=
12 AND c+b=8)
7010 PRINT AT 1,23; ("H" AND c=b=
20)+("I" AND c=b=40)+("J" AND c=
b=3)+("K" AND c=b=5)+("L" AND c=
b=35)+("M" AND c=b=15)+("N" AND
c=b=30)+("O" AND c=b=32)
7020 PRINT AT 1,23; ("P" AND c=b=
4 AND c+b=5)+("Q" AND c=b=28)+("
R" AND c+b=12 AND c+b=7)+("S" AN
D c+b=24 AND c+b=10)+("T" AND c=
b=8 AND c+b=9)+("U" AND c+b=56)
7030 PRINT AT 1,23; ("V" AND c+b=
6 AND c+b=7)+("W" AND c+b=21)+("
X" AND c+b=42)+("Y" AND c+b=24 A
ND c+b=11)+("Z" AND c+b=18)+("NU
MBERS" AND c+b=7)
7035 IF Z=2 THEN GO TO 7500
7040 PAUSE 100
7045 PRINT i: PAUSE 10: NEXT i:
GO TO 9000
7499 REM interactive routine
7500 PAUSE 100: PRINT AT 20,1;"P
ress Y for another go. Press N t
o Stop."
7510 IF INKEY$="" THEN GO TO 750
0
7515 GO TO (10 AND INKEY$="Y")+ (
10 AND INKEY$="y")
7520 CLS : GO TO (6010 AND INKEY
$="N")+ (6010 AND INKEY$="n")+ (75
00 AND CODE INKEY$<>78 AND CODE
INKEY$<>89 AND CODE INKEY$<>110
AND CODE INKEY$<>121)
7650 STOP
7700 CLS : PRINT AT 10,5;"Press
""Y"" to start."
7705 PAUSE 0
7710 IF INKEY$="" THEN GO TO 771
0
7720 GO TO 7512
8000 REM graphics for flag cent
ers
8010 POKE USR "e",BIN 00011000
8012 POKE USR "e"+1,BIN 00111100
8014 POKE USR "e"+2,BIN 01111110
8016 POKE USR "e"+3,BIN 11111111
8018 POKE USR "e"+4,BIN 11111111
8020 POKE USR "e"+5,BIN 01111110
8022 POKE USR "e"+6,BIN 00111100
8024 POKE USR "e"+7,BIN 00011000
8100 POKE USR "f",BIN 00000001
8102 POKE USR "f"+1,BIN 00000011
8104 POKE USR "f"+2,BIN 00000111
8106 POKE USR "f"+3,BIN 00001111
8108 POKE USR "f"+4,BIN 00001111
8110 POKE USR "f"+5,BIN 00000111
8112 POKE USR "f"+6,BIN 00000011
8114 POKE USR "f"+7,BIN 00000001
8200 POKE USR "g",BIN 10000000
8202 POKE USR "g"+1,BIN 11000000
8204 POKE USR "g"+2,BIN 11100000
8206 POKE USR "g"+3,BIN 11110000
8208 POKE USR "g"+4,BIN 11110000
8210 POKE USR "g"+5,BIN 11100000
8212 POKE USR "g"+6,BIN 11000000
8214 POKE USR "g"+7,BIN 10000000
8300 POKE USR "a",BIN 00000000
8302 POKE USR "a"+1,BIN 00000000
8304 POKE USR "a"+2,BIN 00000000
8306 POKE USR "a"+3,BIN 00000000
8308 POKE USR "a"+4,BIN 00011000
8310 POKE USR "a"+5,BIN 00111100
8312 POKE USR "a"+6,BIN 01111110
8314 POKE USR "a"+7,BIN 11111111
8400 POKE USR "b",BIN 11111111
8402 POKE USR "b"+1,BIN 01111110
8404 POKE USR "b"+2,BIN 00111100
8406 POKE USR "b"+3,BIN 00011000
8408 POKE USR "b"+4,BIN 00000000
8410 POKE USR "b"+5,BIN 00000000
8412 POKE USR "b"+6,BIN 00000000
8414 POKE USR "b"+7,BIN 00000000
8500 POKE USR "c",BIN 00000000
8502 POKE USR "c"+1,BIN 01111110
8504 POKE USR "c"+2,BIN 01111110
8506 POKE USR "c"+3,BIN 01111110
8508 POKE USR "c"+4,BIN 01111110
8510 POKE USR "c"+5,BIN 01111110
8512 POKE USR "c"+6,BIN 01111110
8514 POKE USR "c"+7,BIN 00000000
8516 RETURN
8700 REM draw border
8710 PLOT 0,0
8712 DRAW 255,0: DRAW 0,175: DRA
W -255,0: DRAW 0,-175
8720 RETURN
9000 REM select another 50 lett
ers on auto-run
9005 CLS
9010 IF Z=2 THEN GO TO 7500

```

```

9020 IF Z=1 THEN PRINT HI 5,1;"W
ould you like another fifty";AT
10,9;"letters? (Y/N)"; PAUSE 0
9030 IF CODE INKEY$=89 OR CODE I
NKEY$=121 THEN GO TO 9050
9040 IF CODE INKEY$<>89 AND CODE
INKEY$<>121 THEN RUN
9045 STOP
9050 CLEAR : LET Z=1: GO TO 10
9499 REM variable for calculati
ng angles of flags
9500 LET a=50R 2: RETURN
9990 SAVE "SEMAPHORE" LINE 1
9999 STOP

```

Figure 1. LISTing of SEMAPHORE drill

## TYD ☆ BYTS

### PRO/FILE TO MSCRIPT

Paul Holmgren  
Indianapolis, IN

When you don't know any better, anything might be possible. Operating on that theory I said, "Why not?"

I loaded version 5 of Jack Doheny's Mscript and then stuck a tape in my recorder that contained a file saved by the cartridge version of Tom Wood's PRO/FILE. Using the BASIC operating system menus to 5: LOAD/SAVE, then 4: LOAD NEW TEXT, and giving the PRO/FILE filename when prompted by MSCRIPT for FILENAME, I attempted to load the PRO/FILE file into MSCRIPT. Imagine my surprise when it appeared to actually load into the computer! A quick trip to MSCRIPT showed that the file was indeed there. The only problem with it was in the control codes used by PRO/FILE. A simple modification solved the problem.

I added these lines to the end of my version of MSCRIPT:

```

1000 FOR i=S TO S+LN: IF PEEK I=
42 OR PEEK I=1 THEN POKE I,13
1010 NEXT I: GO TO 600

```

From BASIC I issued a GO TO 1000 command which re-formatted the PRO/FILE data for MSCRIPT usage. Once back in MSCRIPT, all I had to do was rearrange the file as I wanted it to appear.

Afterwards, I decided to make the changes a permanent part of my version of MSCRIPT. Along with lines 1000 and 1010 mentioned above, I made the following additions and changes and saved them to my permanent copy of MSCRIPT:

LINE 600: add "6: FORMAT PRO/FILE file"

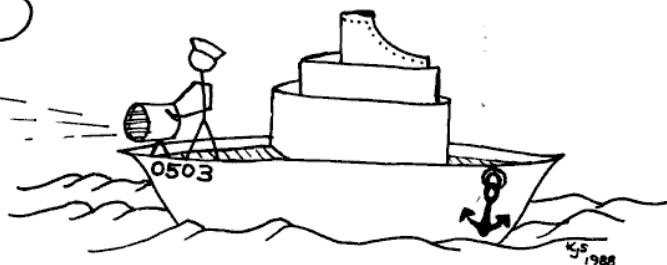
LINE 610: change K\$>5 to K\$>6

Add line 613 IF K\$="6" THEN GO TO 1000

LINE 1000: change GO TO 600 to GO TO 50

Try this to see if it will work with your versions of MSCRIPT and PRO/FILE. It makes these two fine programs even better.

# Communications in a Flash



TS2068, BASIC  
Peter Wentworth

(Editor's NOTE: this program could easily be adapted to the ZX81/TS1000 computer. Would anyone like to try?)

## Blinker Signaling

This program simulates a blinker signalling device. Nowadays, when radio communicators are constantly trying to use ever-higher ultra frequencies, we tend to forget that blinkers have been using, for centuries, frequencies higher than any radio signal yet generated.

## Running Flash

When the program is RUN, night descends. You then tell your "instructor" how fast to send your test messages, and how many characters to send in each group.

You can then choose any one of three options:

1. A printed letter followed by the signal
2. The signal first, then the letter
3. Your own choice of letters

If you choose 1. or 2., the choice of letters is random; if you choose 3., then you (or the instructor) INPUT the message you want.

## Coding Illuminated

The program, LISTed in Figure 1, is pretty straightforward. Line 1 makes sure that your inputs will all be in capital letters. Lines 70 to 340 set initial conditions, and establish the searchlight as User-Designed Graphic "S". As an interesting sidelight: you can see the pattern of the light if you look sidewise at the LISTing of lines 220 to 290.

The "works" of the program are in array M, which is loaded with the data given in lines 650 to 1070. If you're familiar with Morse code, you'll be able to make out the letters within the DATA statements: 6 means a DIT, and 4 a DAH. The 3's are NOPs (do-nothings), inserted to preserve the symmetry of the array.

The searchlight was designed to produce a very small pattern, to simulate the appearance of an

actual ship at a distance. If you want to pretend that you have binoculars powerful enough to produce a larger display, you can use the statement in Figure 2 to replace lines 20, 40, 70, and 90. In this case, lines 220 through 290 can be left out.

(Editor's NOTES:) You may find that the fast speeds attainable by this program are unrealistic. In real life, blinkers can not begin to approach the speeds of radio code, because of the mass of the mechanical shutter involved in modulating the light beam.

It is possible to shorten materially the initialization delay by the following steps:

Change line 120 to DIM M\$(43,5) changed to a string array, size is not changed

Change line 170 to GO SUB 650

DELETE lines 180 through 210

Change line 530 to: GO SUB VAL M\$(CODE J\$(K)-47,I)

Change lines 650 to 1070 to the following form:

```
650 LET M$(1)="44444"
660 LET M$(2)="64444"
660 LET M$(3)="66444"
670 LET M$(4)="66644"
* * * * *
1070 LET M$(43)="44663"
```

Add line 1080 RETURN

```
1 POKE 23658,8: GO TO 110:
POKE sets capital letters
3 RETURN
4 GO TO 70
10 DIM DIT
20 PRINT AT 10,13;"*": REM gra
phics "S"--also at lines 40,70,
and 90
30 PAUSE DIT
40 PRINT AT 10,13;"* "
50 RETURN
60 DIM DAH
70 PRINT AT 10,13;"* "
80 PAUSE DAH
90 PRINT AT 10,13;"* "
100 RETURN
110 DIM J$(60)
120 DIM M(43,5)
130 INK 7
140 PAPER 0
150 BORDER 0
160 CLS
170 FOR I=1 TO 43
180 FOR J=1 TO 5
190 READ M(I,J)
200 NEXT J
210 NEXT I
220 POKE USR "S" ,BIN 00000000
```

```

230 POKE USR "S"+1,BIN 00000000
240 POKE USR "S"+2,BIN 00011000
250 POKE USR "S"+3,BIN 00111100
260 POKE USR "S"+4,BIN 00111100
270 POKE USR "S"+5,BIN 00011000
280 POKE USR "S"+6,BIN 00000000
290 POKE USR "S"+7,BIN 00000000
300 OVER 1
310 PRINT "INPUT SPEED (1-9)":
INPUT LPM
320 IF LPM>10 THEN PRINT "ERROR
: NUMBER TOO HIGH": GO TO 310
330 PRINT "GROUPING (1-60)": IN
PUT GRP
340 PRINT "ENTER :";,"1 FOR SI
GNAL THEN LETTER";,"2 FOR LETTER
THEN SIGNAL";,"3 YOU GIVE LETTE
R"
350 INPUT 0
360 LET DIT=10/LPM
370 LET DAH=30/LPM
380 LET WP=60/LPM
390 CLS
400 PRINT AT 1,1;"LETTERS/SECON
D = ";LPM*.335
410 IF 0=3 THEN PRINT AT 3,1;"E
NTER LETTER(S)"
420 FOR K=1 TO GRP
430 IF 0<>3 THEN LET J$(K)=CHR$
INT (RND*43+48): IF J$(K)<"A" A
ND J$(K)>"9" THEN GO TO 430
440 IF 0<>3 THEN GO TO 480
450 PAUSE 0
460 LET J$(K)=INKEY$
465 IF J$(K)<"A" AND J$(K)<"0"
OR J$(K)>"Z" THEN GO TO 450
470 PRINT J$(K);
480 NEXT K
490 PAUSE 30
500 IF 0=2 THEN PRINT AT 12,13;
J$: PAUSE 60*GRP
510 FOR K=1 TO GRP
520 FOR I=1 TO 5
530 GO SUB M(CODE J$(K)-47,I)
540 PAUSE WP/2
550 NEXT I
560 PAUSE WP
570 NEXT K
580 IF 0<>3 THEN PRINT AT 12,13
: J$
590 IF GRP>2 THEN PRINT AT 20,1
;"ENTER ANY KEY TO CONTINUE": PA
USE 0: LET K$=INKEY$: GO TO 390
600 PAUSE 60
610 GO TO 390
620 DATA 4,4,4,4,4
630 DATA 6,4,4,4,4
640 DATA 6,6,4,4,4
650 DATA 6,6,6,4,4
660 DATA 6,6,6,6,4
670 DATA 4,6,6,6,6
680 DATA 4,4,6,6,6
690 DATA 4,4,4,6,6
700 DATA 3,3,3,3,3
710 DATA 3,3,3,3,3
720 DATA 3,3,3,3,3
730 DATA 3,3,3,3,3
740 DATA 3,3,3,3,3
750 DATA 3,3,3,3,3
760 DATA 3,3,3,3,3
770 DATA 3,3,3,3,3
780 DATA 3,3,3,3,3
790 DATA 3,3,3,3,3
800 DATA 3,3,3,3,3
810 DATA 3,3,3,3,3
820 DATA 6,4,3,3,3
830 DATA 4,6,6,6,3
840 DATA 4,6,4,6,3
850 DATA 4,6,6,3,3
860 DATA 6,3,3,3,3
870 DATA 6,6,4,6,3
880 DATA 4,4,6,3,3
890 DATA 6,6,6,6,3
900 DATA 6,6,3,3,3
910 DATA 6,4,4,4,3
920 DATA 4,6,4,3,3
930 DATA 6,4,6,6,3
940 DATA 4,4,3,3,3
950 DATA 4,6,3,3,3
960 DATA 4,4,4,3,3
970 DATA 6,4,4,6,3
980 DATA 4,4,6,4,3
990 DATA 6,4,6,3,3
1000 DATA 6,6,6,3,3
1010 DATA 4,3,3,3,3
1020 DATA 6,6,4,3,3
1030 DATA 6,6,6,4,3
1040 DATA 6,4,4,3,3
1050 DATA 4,6,6,4,3
1060 DATA 4,6,4,4,3
1070 DATA 4,4,6,6,3

```

Fig. 1 LISTING for FLASH

```

20 PRINT AT 10,12;" ";AT 11,
12;" ";AT 12,12;" "

```

NOTE: Graphics are as follows:

1st line: Shifted 2, Shifted 8, Shifted 1  
 2nd line: Shifted 8 (three times)  
 3d line: UNshifted 7, Shifted 8, Shifted 4

Fig. 2 A larger searchlight

## TYD ☆ BYTS

### PUT AUDIO ON YOUR TAPE

If you're using tape for mass storage, you may be neglecting a very valuable resource. It's awfully easy to forget that the tape was designed for audio signals. The audio capabilities can be exploited in a number of ways:

1. You can put a short voice message in front of each SAVE, giving information like the program name, the peripherals required, etc.
2. (For the TS2068) If your recorder has MONITOR capability, you can insert a customized BEEP message at the end of a SAVE, and a different message to indicate that the tape should be left running, as to load bytes of machine code.

### REM LINE UTILITY FOR TS2068

Paul Holmgren  
 Indianapolis, IN

This utility allows you to create very easy to read, and nicely formatted REM lines with less than the expected memory usage. Try it by entering the following lines on your TS2068:

```

1 REM 8888REM Line Utility De
signed by:88Paul Holmgren85321 W
ilston Wood Ct.8Indy, IN 46254888
10 FOR f=26714 TO 26714+PEEK 2
6712:IF PEEK f=94 THEN POKE f,6
15 NEXT f: STOP

```

(EDITORS NOTE: 8 = TS2068 up arrow symbol)

If your REM line is longer than 255 characters then replace the PEEK 26712 in line 10 with (PEEK 26712 +256\*PEEK 26713). As you can see, approximately 140 bytes of 'empty' REM spaces have been replaced with a mere 12 bytes. Once you have finished expanding the REM, DELETE 10,15.

## A TOUCH OF CLASS (ROOM)...

Here we have another set of programs tied together by a common thread. Both of the following programs were designed for classroom use--and by authors that are in position to make a direct test of the audience response to their programs. Alex Sweitzer is himself a teacher, while Shawn Byrne's mother teaches a fourth grade that has five TS1500s

operating in their classroom.

There's an element of mutual good fortune here. Alex and Shawn are lucky, of course, to have such ready access to "market research". But the youngsters are doubly lucky. Lucky not only to have access to computers, but also to have teachers that can make innovative and effective use of the computers' potential.

# GEOMETRY PLOTTER

TS1000, 16 K, BASIC  
Contest entry  
Alex R. Sweitzer

This is another program by the winner of the TS1000 section of our contest. Mr. Sweitzer tells us that his program has been "field tested" in his classroom. He also reports that he has one pupil who is turning into a real computer enthusiast as a result of his work with the good ol' ZX81. More power to you, Alex!

The program is pretty straightforward, and contains its own instructions. In reply to the computer's prompts, you specify X1 and Y1, X2 and Y2, and which one of eight given symbols will be used for the plot. The computer then plots the straight line (or as close as it can come to a straight line, given the block-graphics limitations of the computer) from X1,Y1 to X2,Y2. If your selection of co-ordinates is not within the allowed range, a humorous error message is given (line 930). Which is fair, because you've been told ahead of time what the acceptable limits were.

## Editor's Comments

It's obvious that the author is a teacher, from the fact that the program describes him as "Mr. Sweitzer" (no first name). He says that the program is being used by students between 8 and 12 years of age. What he didn't mention is that some of us slightly older people can find it an interesting medium for drawing pictures.

I wasn't able to make the ERASE function work the way I thought that the instructions said it would. Maybe this is an example of Tom Lehrer's comment on New Math: "It's so simple that only a child can do it."

Similarly, I didn't find any provision for aborting the program. Sure, we old hands know how to frustrate the computer by INPUTting an unknown quantity, or (if a string INPUT is requested) a STOP, after EDITing out the quotation-mark prompt, but fifth-graders may not know about those devious techniques.

One other refinement that might make the program more educational would be the display of X and Y scales.

But it's a fun program, for a' that.

NOTE: the lines in ~~ERASE~~ print are as follows:

0 (author's name and address)  
154, 294, 394 (underline)  
240 PLOTTING POINT...

```
470 PLOTTING POINT...
530 CONNECTING POINTS...WAIT
930 PLEASE FOLLOW DIRECTIONS HU
MAN..
1170 GEOMETRY PLOTTER
1250 DIRECTIONS
1510 USES THESE NUMBERS TO PLOT
1590 USES THESE NUMBERS TO PLOT
1640 ERASE POINT LINES
```

```
0 REM
10 SLOW
20 LET A=0
30 GOSUB 1160
40 GOSUB 990
50 PRINT AT 21,0;"TYPE X START
ING LOCATION (0-31)"
60 INPUT XSTART
61 LET A=0
64 REM
70 IF XSTART>31 OR XSTART<0 TH
EN GOSUB 930
80 IF XSTART>31 OR XSTART<0 TH
EN GOTO 50
90 GOSUB 970
100 PRINT AT 21,0;"YOU ENTERED:
";XSTART
109 LET PP=20
110 FOR P=1 TO PP
120 IF INKEY$="M" THEN GOTO 50
130 NEXT P
140 PRINT AT 21,0;"TYPE Y START
ING LOCATION (1-21)"
150 INPUT YSTART
154 REM
160 IF YSTART>21 OR YSTART<1 TH
EN GOSUB 930
170 GOSUB 970
180 IF YSTART>21 OR YSTART<1 TH
EN GOTO 140
190 PRINT AT 21,0;"YOU ENTERED:
";YSTART
200 FOR P=1 TO PP
210 IF INKEY$="M" THEN GOTO 140
220 NEXT P
230 GOSUB 970
240 PRINT AT 21,0;"
250 PRINT AT 21,20;"(X=";XSTART
";Y=";YSTART;")"
260 PAUSE 100
270 PRINT AT YSTART-21,XSTART;"
280 PRINT AT 21,0;" TYPE X ENDI
NG LOCATION (0-31) "
290 INPUT XEND
294 REM
300 IF XEND>31 OR XEND<0 THEN G
OSUB 930
310 IF XEND>31 OR XEND<0 THEN G
OTO 280
320 GOSUB 970
330 PRINT AT 21,0;"YOU ENTERED:
";XEND
340 FOR P=1 TO PP
350 IF INKEY$="M" THEN GOTO 280
360 NEXT P
370 GOSUB 970
380 PRINT AT 21,0;" TYPE Y ENDI
NG LOCATION (1-21) "
390 INPUT YEND
394 REM
400 IF YEND>21 OR YEND<1 THEN G
OSUB 930
410 IF YEND>21 OR YEND<1 THEN G
OTO 380
420 GOSUB 970
```

```

430 PRINT AT 21,0;"YOU ENTERED:
";YEND
440 FOR P=1 TO PP
450 IF INKEY$="M" THEN GOTO 380
460 NEXT P
470 PRINT AT 21,0;"PLEASE PRESS
";
480 PRINT AT 21,20;"(X=";XEND;"
";Y=";YEND;"")
490 PAUSE 100
500 PRINT AT YEND-21,XEND;"M"
510 PAUSE 60
520 GOSUB 970
530 PRINT AT 21,0;"CONNECTING
";
540 GOSUB 560
550 GOTO 280
560 LET U=XEND-XSTART
570 LET M=ABS (U)
580 LET X1=SGN (U)
590 LET X2=X1
600 LET V=YEND-YSTART
610 LET N=ABS (V)
620 LET Y1=SGN (V)
630 LET Y2=Y1
640 IF M>N THEN GOTO 700
650 LET U=N
660 LET N=M
670 LET M=U
680 LET X2=0
690 GOTO 710
700 LET Y2=0
710 LET S=INT (M/2)
720 FOR I=0 TO M
730 PRINT AT YSTART-21, XSTART:
CHR$(NN);
740 LET S=S+N
750 LET X0=X2
760 LET Y0=Y2
770 IF S<M THEN GOTO 810
780 LET S=S-M
790 LET X0=X1
800 LET Y0=Y1
810 LET XSTART=XSTART+X0
820 LET YSTART=YSTART+Y0
830 NEXT I
840 LET XSTART=XEND
850 LET YSTART=YEND
860 PRINT AT 21,0;"C=CONT./E=ER
ASE/P=PRINT/R=RUN->";
862 INPUT R$
863 PRINT R$
865 PAUSE 60
870 IF R=1 THEN LET NN=H
875 IF R$="C" THEN RETURN
900 IF R$="E" THEN GOTO 1640
910 IF R$="R" THEN GOTO 40
920 IF R$="P" THEN COPY
923 GOTO 860
930 PRINT AT 21,0;"PLEASE PRESS
";
940 PAUSE 200
950 GOSUB 970
960 RETURN
970 PRINT AT 21,0;"..

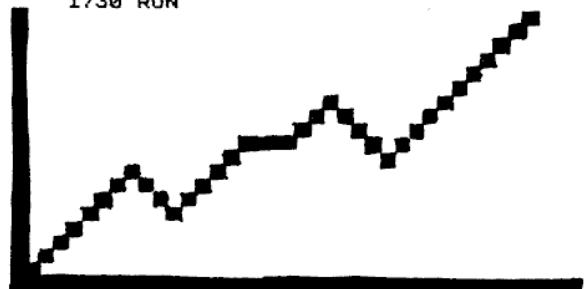
980 RETURN
990 CLS
1000 PRINT AT 2,0;"PLEASE ENTER
ONE OF THESE CHARACTERS FO
R THE PLOTTING SYMBOL."
1010 PRINT "1", "2", "3", "4", "5", "6", "7", "8", "9", "0", "+", "-", "*", "/", "<";
1020 PRINT "ENTER NUMBER NEX
T TO SYMBOL."
1030 INPUT RR
1040 IF RR<1 OR RR>8 THEN GOSUB
930
1050 IF RR<1 OR RR>8 THEN GOTO 9
90
1060 IF RR=1 THEN LET NN=126
1070 IF RR=2 THEN LET NN=23
1080 IF RR=3 THEN LET NN=27
1090 IF RR=4 THEN LET NN=26
1100 IF RR=5 THEN LET NN=21
1110 IF RR=6 THEN LET NN=22
1120 IF RR=7 THEN LET NN=14
1130 IF RR=8 THEN LET NN=8
1140 CLS
1150 RETURN
1160 CLS
1170 PRINT AT 10,0;"SEE THE
";
1180 PRINT AT 15,6;"BY MR. SWEIT
ZER";AT 17,6;"FEBRUARY 11, 1986"
1190 PRINT AT 19,8;"UPDATED JANU
ARY 28, 1987"
1200 PRINT AT 21,0;"PRESS <C> TO
CONTINUE..."
1210 IF INKEY$="C" THEN GOTO 124
0
1220 PRINT AT 21,0;"..
1230 GOTO 1200

```

```

1240 CLS
1250 PRINT "SECTION 3"
1260 PRINT "THIS PROGRAM WILL
SHOW YOU HOW TO PLOT ON A GRID
JUST LIKE IN YOUR MATH BOOK. F
IRST I WILL"
1270 PRINT "SHOW YOU THE NUMBERS
FOR X(0-31) AND FOR Y(1-21). STU
DY THE GRID."
1280 PRINT "NEXT YOU MUST SELECT
A SYMBOL TO USE FOR YOUR PLOTTIN
G(1-8)."
1290 PRINT "AFTER THAT YOU SELEC
T BOTH X AND Y STARTING LOCATIONS
. I WILL"
1300 PRINT "PLOT THESE POINTS FO
R YOU. THEN I WILL ASK FOR BOTH
X AND Y"
1310 PRINT "ENDING POINTS. I WI
LL CONNECT THOSE TWO POINTS. Y
OU THEN MAY CONTINUE TO PLOT AND
CONNECT"
1320 PRINT "POINTS. IF YOU
ENTER A WRONG NUMBER YOU MAY
PRESS THE"
1330 PRINT "LETTER <M> TO CORREC
T YOUR WRONG NUMBER. YOU ARE GIV
EN ABOUT"
1340 PRINT AT 21,0;"PRESS <C> TO
CONTINUE READING..."
1350 IF INKEY$="C" THEN GOTO 137
0
1360 GOTO 1350
1370 CLS
1380 PRINT "ONE TO TWO SECONDS T
O PRESS <M> AFTER I SHOW YOU THE
NUMBER THAT"
1390 PRINT "YOU ENTERED."
1420 PRINT "IF YOU PLOT AND CO
NNECT YOUR POINTS YOU CAN ERA
SE YOUR LINES AND POINTS IF YOU
PRESS <E>"
1430 PRINT "INSTEAD OF <C> WHEN
ASKED. WHEN YOU PRESS <E> YOU MU
ST ENTER THE"
1440 PRINT "X AND Y VALUES FROM
THE PREVIOUS MOVE. THE COMPUTER
WILL CONNECT YOUR MISTAKEN POINTS
WITH YOUR"
1450 PRINT "PREVIOUS POINTS. TH
E COMPUTER WILL USE BLANKS WHIC
H LOOKS LIKE IT IS ERASING. CONT
INUE ON AS NORMAL AFTER ERASING
LINE."
1460 PRINT AT 21,0;"PRESS <C> TO
START PLOTTING..."
1465 PAUSE 4E4
1490 CLS
1500 PRINT "01234567891111111111
2222222222233 0123456789
012345678901"
1510 PRINT AT 4,0;"USE THE
";
1520 PRINT AT 6,10;"(0 TO 31)"
1530 PAUSE 100
1540 FOR U=1 TO 21
1550 PRINT AT 21-U,0;U
1560 IF U>3 THEN FAST
1570 NEXT U
1580 SLOW
1590 PRINT AT 17,2;"USE THE
";
1600 PRINT AT 19,10;"(1 TO 21)"
1610 PRINT AT 21,0;"PRESS <C> TO
CONTINUE"
1620 IF INKEY$="C" THEN RUN 40
1630 GOTO 1620
1640 REM PLEASE POINTS LOSE
1650 LET A=1
1660 LET H=NN
1670 LET NN=0
1680 PRINT AT 21,0;"
"
1690 PRINT AT 21,0;"USE PREVIOUS
<X> AND <Y> VALUES"
1700 PAUSE 200
1710 RETURN
1720 SAVE "PLOT"
1730 RUN

```



# MULTIPLICATION TUTOR

Shawn Byrne  
TS1000 16K  
Contest entry

This program is designed to lead students, step by step, through the intricacies of multiplying multi-digit numbers. You are first asked to specify the range of multiplicand (to 999,999) and multiplier (to 999). Then the computer asks your name, and courteously addresses you by that name throughout the program. (I wonder how many students give in to the temptation to use a rude word here, or at least a colorful nickname--ed.) You are then asked to decide how many problems you are going to set for yourself to do.

From then on, the program leads you, step by step, through the multiplication of a pair of numbers, chosen at random within the limits you have set. Every character is blinked in the sequence in which it should be handled. Even "carries" are taken into consideration.

```

      3
    850
  x  57
  ----
    5950

```

Fig. 1 MULTIPLICATION TUTOR in action

(note the prompt to CARRY 3, above the 8)

If you give a wrong answer, the computer insistently blinks the steps again, and keeps on doing so until your answer is right. When you have successfully completed a problem, the computer asks you whether you would like to do another (unless you have already finished the number that you contracted to do). If you say "no", prepare for a shock--see line 869.

## Editor's Comments

They say you shouldn't judge a book by its cover (or my daughter tells a story that indicates that you shouldn't book a judge by his cover). It's hard to follow that advice in this case, though. The cassette box was neatly labeled with all that an editor needs: name, address, and telephone number of the author; title and SAVE label of the program; a list of the hardware needed. A dream!

I have just three criticisms, two of them trivial: first, there is no provision made to abort the program, and second, you're a little way into the program before the computer asks your name. Sort of reminds me of those irritating TV commercials, where the salesman makes about a third of the pitch, and then says "Hi! I'm Fulano de Tal", or whoever. Maybe some psychologist said that it's good sales technique. Possibly Miss Manners would concur, but I dunno.

A little more importantly, I think it would have been helpful to display the correct answer if a student gave the wrong reply more than once.

```

1 REM MULTIPLICATION TUTOR
2 BY SHAWN BYRNE
3
4 GOTO 9000
5 PRINT "RANGE OF:"
6 PRINT "MULTIPLICAND (TO 999,999)?"
7 INPUT R1
8 PRINT AT 1,0;"MULTIPLIER (TO 999)?"
9 INPUT R2
10 RAND
11 CLS
12 PRINT "HELLO, TYPE IN YOUR NAME AND THEN PRESS ENTER."
13 INPUT Z$
14 CLS
15 PRINT Z$;" THIS IS AN";TAB
16;"EASY AND FUN WAY TO LEARN";
17;"MULTIPLICATION."
18 GOTO 75
19 CLS
20 PRINT "HOW MANY PROBLEMS DO YOU WANT TO DO?";"TYPE IN THE NUMBER";" AND PRESS ENTER."
21 INPUT Z
22 FOR U=U TO Z
23 CLS
24 LET R$=STR$ INT (RND*R1+U)
25 LET Q$=STR$ INT (RND*R2+U)
26 LET L=LEN R$
27 LET E=LEN Q$
28 FOR A=U TO L
29 LET B=VAL R$(L+U-A)+U
30 LET C=33-3*A
31 PRINT AT U,C;N$(B,U);TAB C;
32 N$(B,2);TAB C;N$(B,3)
33 NEXT A
34 PRINT AT 6,21;" ";TAB 21;"
35
36 LET C=30
37 LET B=VAL Q$(E)+U
38 PRINT AT 5,C;N$(B,U);TAB C;
39 N$(B,2);TAB C;N$(B,3)
40 IF E=U THEN GOTO 230
41 LET C=27
42 LET B=VAL Q$(U)+U
43 PRINT AT 5,C;N$(B,U);TAB C;
44 N$(B,2);TAB C;N$(B,3)
45 PRINT AT 8,0;M$
46 IF L=4 THEN PRINT AT 8,33-3
47 *L;L$ ( TO 3*L-U)
48 IF L=4 THEN PRINT AT 8,21;"
49
50 PRINT AT 8,0;M$
51 LET C=VAL Q$(E)+U
52 LET H=30-3*(LEN Q$-E)
53 IF Q$(LEN Q$) <> "0" THEN GOT
54 O 280
55 LET C=VAL Q$(U)+U
56 LET H=27
57 PRINT AT 9,30;" ";TAB 30;"
58 ";TAB 30;"
59 LET C$="0"
60 FOR A=U TO L
61 LET B=VAL R$(L+U-A)+U
62 LET B$=STR$ ((C-U)*(B-U)+U
63 L C$)
64 LET K=9
65 LET F=33-3*A
66 LET J=F
67 IF (LEN Q$ <> 2 OR E <> U) AND
68 Q$(LEN Q$) <> "0" THEN GOTO 350
69 LET J=F-3
70 IF Q$(LEN Q$) <> "0" THEN GOT
71 O 348
72 GOTO 350
73 LET K=13
74 FOR G=U TO 2
75 PRINT AT U,F;" ";TAB F;"
76 ";TAB F;"
77 PRINT AT U,F;N$(B,U);TAB F;
78 N$(B,2);TAB F;N$(B,3)
79 NEXT G
80 FOR G=U TO 2
81 PRINT AT 6,21;" ";TAB 21;"
82
83 PRINT AT 6,21;" ";TAB 21;"
84
85 NEXT G
86 FOR G=U TO 2
87 PRINT AT 5,H;" ";TAB H;"
88 ";TAB H;"
89 PRINT AT 5,H;N$(C,U);TAB H;
90 N$(C,2);TAB H;N$(C,3)
91 NEXT G
92 IF C$="0" THEN GOTO 460
93 FOR G=U TO 2
94 PRINT AT 0,F-U;"+"

```

```

406 FOR I=U TO 2
409 NEXT I
412 PRINT AT 0,F-U;" "
415 NEXT G
418 FOR G=U TO 2
421 PRINT AT 0,F;" "
424 PRINT AT 0,F;C$
427 FOR I=U TO 2
430 NEXT I
433 NEXT G
460 FOR G=U TO 60
465 PRINT AT K,J;" ";TAB J;" "
";TAB J;" "
470 LET A$=INKEY$
480 IF A$>="0" AND A$<="9" THEN
GOTO 510
490 PRINT AT K,J;" ";TAB J;" "
";TAB J;" "
500 NEXT G
505 GOTO 340
510 PRINT AT K,J;N$(VAL A$+U,U)
;TAB J;N$(VAL A$+U,2);TAB J;N$(U
AL A$+U,3)
520 IF A$=B$(LEN B$) THEN GOTO
560
530 FOR G=U TO 10
540 NEXT G
550 GOTO 340
560 IF LEN B$=U THEN GOTO 805
570 IF A=L THEN GOTO 690
572 FOR G=U TO 5
574 NEXT G
580 PRINT AT 0,F-3;"?"
590 LET A$=INKEY$
600 IF A$>="0" AND A$<="9" THEN
GOTO 630
610 PRINT AT 0,F-3;" "
620 GOTO 580
630 PRINT AT 0,F-3;A$
640 IF A$=B$(U) THEN GOTO 680
650 FOR G=U TO 10
660 NEXT G
670 GOTO 340
680 LET C$=A$
682 GOTO 810
690 LET J=J-3
695 PRINT AT K,J;" ";TAB J;" "
";TAB J;" "
700 LET A$=INKEY$
710 IF A$>="0" AND A$<="9" THEN
GOTO 740
";TAB J;" "
720 PRINT AT K,J;" ";TAB J;" "
";TAB J;" "
730 GOTO 695
740 PRINT AT K,J;N$(VAL A$+U,U)
;TAB J;N$(VAL A$+U,2);TAB J;N$(U
AL A$+U,3)
750 IF A$=B$(U) THEN GOTO 800
760 FOR G=U TO 10
770 NEXT G
780 PRINT AT K,J;" ";TAB J;" "
";TAB J;" "
790 GOTO 330
805 LET C$="0"
810 NEXT A
815 IF C$(LEN C$)="0" THEN GOTO
830
820 IF E=2 THEN GOTO 900
825 IF LEN C$=2 THEN GOTO 920
830 FOR G=U TO 100
840 NEXT G
841 IF Z<>U THEN GOTO 850
842 CLS
843 PRINT "DO YOU WANT TO DO","
SOME MORE ";Z$;"?"
844 PRINT "PRESS Y FOR YES OR N
FOR NO"
845 IF INKEY$="Y" THEN GOTO 74
846 IF INKEY$="N" THEN GOTO 66
847 GOTO 845
849 GOTO 66
850 CLS
855 PRINT "GOOD, ";Z$;TAB 0;"DO
YOU WANT TO DO ANOTHER?","PRESS
Y FOR YES OR N FOR NO"
860 LET A$=INKEY$
863 IF A$<>"Y" AND A$<>"N" THEN
GOTO 860
866 IF A$="Y" THEN PRINT "OK,;"
869 IF A$="N" THEN PRINT "TOO B
AD,;"
872 PRINT " HERE WE GO AGAIN"
874 FOR G=U TO 50
875 NEXT G
877 NEXT U
880 GOTO 66
900 LET E=U
905 PRINT AT 13,30;" ";TAB 30;
";TAB 30;" "
910 GOTO 250
920 LET J$=STR$(VAL A$+VAL C$(
2))
930 LET K$=STR$(10*VAL A$+VAL
C$(U))
933 LET D=LEN J$

```

```

936 LET E=LEN K$
940 PRINT AT 16,33-3*E;L$( TO 3
+E-U);AT 0,0;M$
945 LET H=30-3*E
947 LET C$="0"
950 FOR A=1 TO E
960 LET F=33-3*A
962 LET C=VAL K$(E+U-A)+U
963 IF A>D THEN GOTO 1025
965 LET B=VAL J$(D+U-A)+U
968 LET B$=STR$(C+B-2+VAL C$)
970 FOR G=U TO 2
975 PRINT AT 9,F;" ";TAB F;" "
";TAB F;" "
980 PRINT AT 9,F;N$(B,U);TAB F;
N$(B,2);TAB F;N$(B,3)
990 NEXT G
1000 FOR G=U TO 2
1010 PRINT AT 14,H;" ";TAB H;" "
";TAB H;" "
1015 PRINT AT 14,H;" ";TAB H;" "
";TAB H;" "
1020 NEXT G
1022 GOTO 1030
1025 LET B$=STR$(C+U+VAL C$)
1030 FOR G=U TO 2
1032 PRINT AT 13,F;" ";TAB F;" "
";TAB F;" "
1034 PRINT AT 13,F;N$(C,U);TAB F
;N$(C,2);TAB F;N$(C,3)
1036 NEXT G
1038 IF C$="0" THEN GOTO 1070
1040 FOR G=U TO 2
1043 PRINT AT 8+4*(A>D),F-U;"+"
1046 PRINT AT 8+4*(A>D),F-U;CHR$
(10*(A>D))
1049 NEXT G
1052 FOR G=U TO 2
1055 PRINT AT 8+4*(A>D),F;" "
1058 PRINT AT 8+4*(A>D),F;C$
1061 NEXT G
1070 FOR G=U TO 60
1080 PRINT AT 17,F;" ";TAB F;" "
";TAB F;" "
1090 LET A$=INKEY$
1100 PRINT AT 17,F;" ";TAB F;" "
";TAB F;" "
1110 IF A$>="0" AND A$<="9" THEN
GOTO 1200
1120 NEXT G
1130 GOTO 970+60*(A>D)
1200 PRINT AT 17,F;N$(VAL A$+U,U)
;TAB F;N$(VAL A$+U,2);TAB F;N$(
VAL A$+U,3)
1210 IF A$<>B$(LEN B$) THEN GOTO
1130
1220 IF VAL B$<=9 THEN GOTO 1370
1230 FOR G=U TO 5
1240 NEXT G
1245 IF A=E THEN GOTO 2000
1250 PRINT AT 8+4*(A>D),F-3;"?"
1260 LET A$=INKEY$
1270 PRINT AT 8+4*(A>D),F-3;" "
1280 IF A$<"0" OR A$>"9" THEN GO
TO 1250
1290 PRINT AT 8+4*(A>D),F-3;A$
1300 IF A$=B$(U) THEN GOTO 1340
1310 FOR G=U TO 10
1320 NEXT G
1330 GOTO 970
1340 LET C$=A$
1350 GOTO 1400
1370 LET C$="0"
1400 NEXT A
1410 GOTO 830
2000 FOR G=U TO 60
2010 PRINT AT 17,F-3;" ";TAB F-
3;" ";TAB F-3;" "
2015 LET A$=INKEY$
2020 PRINT AT 17,F-3;" ";TAB F-
3;" ";TAB F-3;" "
2030 IF A$>="0" AND A$<="9" THEN
GOTO 2060
2040 NEXT G
2050 GOTO 1130
2060 PRINT AT 17,F-3;N$(VAL A$+U
,U);TAB F-3;N$(VAL A$+U,2);TAB F
-3;N$(VAL A$+U,3)
2070 IF A$<>B$(U) THEN GOTO 1130
2080 GOTO 830
9000 LET U=1
9002 FAST
9005 DIM N$(10,3,2)
9010 LET A$=" "
9015 LET L$=" "
9017 LET M$=" "
9020 FOR A=U TO 10
9030 FOR B=U TO 3
9040 LET N$(A,B)=A$
9050 LET A$=A$(3 TO )
9060 NEXT B

```

```

9070 NEXT A
9075 SLOW
9080 GOTO 20
9998 SAVE "M"
9999 RUN

```

Fig.2 LISTing for MULTIPLICATION TUTOR

Rather than have you guessing as to what Shawn wanted in line 9010 of his listing, I've decided to include the "English" version of line 9010 here.

With the GRAPHICS mode selected (press and hold the SHIFT key then press the '9' key), press and hold the SHIFT key and enter the following:

T Y 5 8 Y T 2 5

Turn the GRAPHICS mode off (press and hold the SHIFT key and then press the '9' key). Press the SPACE key.

Turn the GRAPHICS mode on again, press and hold the SHIFT key and enter the following:

5 3 W T Y 3 1 W 6 7 R 2 Y Y T 4 5 W W

Turn the GRAPHICS mode off and press the SPACE key.

Turn the GRAPHICS mode on again, press and hold the SHIFT key and enter the following:

5 E 7 7 Y Y T T 1 E Y Y T 7 R

Turn the GRAPHICS mode off and press the SPACE key.

Turn the GRAPHICS mode on again, press and hold the SHIFT key and enter the following:

T

Turn the GRAPHICS mode off and press the SPACE key.

Turn the GRAPHICS mode on again, press and hold the SHIFT key and enter the following:

5 T Y T Y Y T T Y Y Q 3 T

Your line 9010 should now look like Shawn's.-jdm

## Comes The Dawn

With reddened face, your Editor suddenly realized the reason for the "deficiencies" in the Plotter and Multiplication programs. I had forgotten entirely that they were designed for CLASSROOM use.

Obviously (obvious in retrospect, that is) you don't want the little angels aborting the program. Policy decisions like that should be up to the teacher. Similarly, in the case of the Multiplication program, the teacher sets the level

of difficulty, and THEN turns it over to the class, at the "Hi, I'm..." stage.

Sorry to miss such an obvious point...

# OFF THE WALL

## Daffynitions

This sort of thing is contagious. Do any readers have more to suggest? (I'm sorry that we can't pay you for these, except in terms of immortality.)

UNPLOT - an international conspiracy  
 USSR - perhaps one of the participants in an UNPLOT  
 PEEK - what Keats said that Cortez was silent on in Darien. (Actually, it was Balboa, but who cares, besides Mrs. Cortez and Mrs. Balboa?)  
 POKE - What you don't buy a pig in a, but what you sometimes buy a pig for its  
 PAUSE - the things the LINE makes PRINTS with  
 FOR - the number of PAUSE per LINE  
 OR - native metal  
 LOAD - a rich deposit of OR

P.S. That first bunch came from Fred Nachbaur. Must be those Canadian winters.

# TYD★BYTS

## A SHOCKING SUGGESTION

You've been cautioned to ground yourself before touching your computer on dry days, to avoid zapping delicate components. The best way, you've been told, is to touch some massive metal object, like a filing cabinet. Or better yet, a water pipe, or something else really grounded. But getting up the courage to court a static shock is something like watching Jocelyn test a hot iron with a wet finger. So here's how to make it painless:

a) you can swat that filing cabinet with your open palm, and you'll never notice the shock.

b) or you can hold some metal object (such as a screwdriver, a key, a paper punch) in your hand and make your ground contact with that object. You see, what really bothers you about that shock is not the flow of electrons, but the minute amount of intense heat generated at the point of discharge. When that heat is all generated out at the end of your key, you don't feel it at all.

P.S. This technique also pulls the fangs of your car door handle on a winter day.



# CLASSIFIED

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## TYD ★ BYTS

Have you ever tried LOADING a L-O-N-G tape into your ZX81/TS1000, only to find out at the Nth minute that your cassette player had the wrong setting of the volume control, or of the tone control? Or possibly a mis-alignment of the head? According to Murphy's law, you never discover such a misadjustment until just before the moment that LOADING is complete.

So here's what you do. Every time you SAVE a long program, SAVE this program just before it, on the same tape, of course.

```
100 SAVE "TEST"
110 CLS
120 PRINT,,,,,"TAPE SETTING OK"
```

Then LOAD this short program before you try the big one. If it LOADs all right, you at least have a fighting chance at the long one.

# SyncWare News

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